STAFF WORKSHOP
BEFORE THE
CALIFORNIA ENERGY RESOURCES CONSERVATION
AND DEVELOPMENT COMMISSION

In the Matter of:              )
FUEL EFFICIENT TIRE PROGRAM   ) Docket No.
(AB-844, Statutes of 2003)     ) 07-FET-1

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Adam Gottlieb
Caryn Holmes
Mike Smith

ALSO PRESENT

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Rubber Manufacturers Association

Daniel M. Guiney
Yokohama Tire Corporation

Mark E. Hawley
ENVIRON Corporation

Eugene A. Petersen
Consumer Reports

Tim Robinson
Bridgestone Firestone North American Tire, LLC

Michael Wischhusen
Michelin North America, Inc.

Alan Meier
Lawrence Berkeley National Laboratory

Luke Tonachel (via teleconference)
National Resource Defense

Walter H. Waddell
Exxon Mobil Chemical Company

Nobuhiko Watanabe
Toyo Tires Holdings of America, Inc.

Thomas Okihisa
Toyo Tire (U.S.A.) Corporation

B.B. Blevins
California Strategies, LLC
ALSO PRESENT

Andrew F. Burke  
Institute of Transportation Studies  
University of California Davis

Alberto C. Sumera, Jr.  
Yokohama Tire Corporation

Bradley J. Rump  
Cooper Tire and Rubber Company

Sim Ford  
The Goodyear Tire and Rubber Company

Megan Lloyd-Jones  
Edelman Public Relations

Julie Abraham  
Hisham Mohamed (via teleconference)  
Steven Wood  
National Highway Traffic Safety Administration  
U.S. Department of Transportation

Brian Callahan (via teleconference)  
Hankook Tire

Bob Ulrich (via teleconference)  
Modern Tire Dealer Magazine

Sally French (via teleconference)  
Integrated Waste Management Board

Randy Cooper (via teleconference)  
Kumbo Tire

Jim Popio (via teleconference)  
Smithers-Rabena Laboratory

Jennifer Tuthill (via teleconference)  
Natural Resources Canada

Bruce Lambillotte (via teleconference)  
Smithers Scientific Services

Ayana Miranda  
Maryland Department of the Environment

PETERS SHORTHAND REPORTING CORPORATION  (916) 362-2345
ALSO PRESENT

Mike Miguel
Jessica Johnston
Kamal Ahuja
Mihail Cucu
California Air Resources Board

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PETERS SHORTHAND REPORTING CORPORATION  (916) 362-2345
MR. TUVELL: I'd like to bring the workshop to order. We have a little bit cosier room for the workshop today, as opposed to our main hearing room. Tracey and I were just talking. Hope that increases the opportunity for dialogue, in particular. But we're likely to pay a price ventilation-wise, so I want to apologize for that ahead of time.

Thank you for coming. My name is Ray Tuvell. I'm the manager of the fuel efficient tire program here at the California Energy Commission. And this is one of our staff workshops that we're using to try to solicit information, exchange views, perspectives, enter into a dialogue to get the issues out, the information out, the perspectives out that we can then use to move forward with developing a consumer information program principally for fuel efficient tires. And this is one in a series of our workshops that we have conducted.

I have a little bit of basic business to take care of first. First of all, the restrooms are right outside the door and to the right.
First flight up there's a coffee shop if you want to go grab a cup of coffee, take a break of some sort.

We do not have scheduled breaks on the agenda, as you see, but it's obviously our intention to break at some time for lunch and then we'll kind of do that by figuring out how things go and finding the appropriate timing. But figure around 12-ish or so we'll be taking a break.

In the case of an emergency in the building today and the siren goes off and we need to evacuate, simply follow me. We'll go out the door and our evacuation procedure is across, katty-corner to the park over there. And wait for instructions to occur in coming back. Not anticipating any earthquakes or anything today, guys. Those of you that are outside of California.

We do have a very ambitious agenda today, as I hope you've seen when you picked up the material or received our notices. And so I'm looking forward to moving forward with it. And fully expect it, though, to take the entire day. And so please plan accordingly.

Also, let me mention that this workshop
is a little unique, especially for me, in that ordinarily I'm responsible for pulling the workshop together and the agenda and getting all the speakers and everything going.

But today what we had done is we provided that opportunity for the RMA and the tire industry. So the agenda that you see today, and, of course, I'm going to soon be handing over the mic to Tracy, is the tire industry's desire to get this information out there. Okay.

So soon after my introduction I'm going to hand over the mic and the orchestration of this workshop to Tracey Norberg of the RMA.

Now, this being the case, and Tracey and I talked about this, we really want to encourage dialogue. And while it may seem a little bit formal in the room today, yes, I do have a court reporter, and yes, we have processes and procedures, I really want to encourage dialogue. Okay.

And that being the case, and Tracey and I have talked about this also, please bring up questions during the presentations. Don't hold it all to the end, okay. That will be the most useful to us.
Now, in doing that, since we are recording today, a couple things that are important. Please make sure to state your name and affiliation for the record. If you're coming up to ask questions I ask you to come to the mic over here at this end of the table where the two gentlemen are sitting. Okay. And that will get you on the record and over the speakerphone.

We are webcasting today. And so there will be other people participating through the webcast, and, of course, I'm encouraging them, just as I'm encouraging you in the room, to engage in full participation. Okay.

So, what else do I have -- yeah, and of course, we are transcribing the entire meeting. So following the workshop we will post on our website copies of all of the presentations, plus a transcript of the meeting today. Okay.

And so that's about it for me. If there's any other questions as the day goes by, you know, just grab me, let me know. Otherwise I'm going to come out in the audience and be an audience-type participator today. Little bit of a different role for me.

So, Tracey, going to hand it off to you
now. And this is Tracey Norberg from the Rubber Manufacturers Association.

That's okay. If it's okay with you folks -- Tracey has asked if it would be okay, people would feel comfortable introducing themselves for the record, as being in the meeting today.

So, it's going to take a little bit of a parade, but if I can ask you to come up to the mic and just introduce yourself, and affiliation, for the record.

And also following completing that in the room, if I could ask for the people on WebEx to also introduce themselves and their affiliation, I would really appreciate that.

MR. WISCHHUSEN: My name's Mike Wischhusen representing Michelin.

MR. GUINEY: Dan Guiney, Yokohama Tire.

MR. PETERSEN: I'm Gene Petersen with Consumer Reports.

MR. WATANABE: I'm Nobuhiko Watanabe, Toyo Tires.

MR. OKIHISA: Thomas Okihisa with Toyo Tires.

MR. BLEVINS: B.B. Blevins with
California Strategies.

MR. MEIER: Alan Meier, Lawrence Berkeley National Lab.

MR. BURKE: Andy Burke, UC Davis, Institute of Transportation Studies.

MR. ROBINSON: Tim Robinson, Bridgestone.

MR. SUMERA: Albert Sumera, Yokohama Tire.

MR. RUMP: Brad Rump, Cooper Tire.

MR. FORD: Sim Ford, Goodyear Tire and Rubber Company.

DR. HAWLEY: Mark Hawley, ENVIRON Corporation.


MS. LLOYD-JONES: Megan Lloyd-Jones, Edelman Public Relations.


MR. WOOD: Steven Wood, NHTSA.


DR. WADDELL: Walter Waddell, Exxon Mobil.
MR. TUVELL: And we've completed introductions of everyone in the room. Could I please ask for those of you participating on WebEx to introduce yourselves, also.


MR. CALLAHAN: Brian Callahan, Hankook Tire.

MR. ULRICH: Bob Ulrich, Editor of Modern Tire Dealer Magazine.


MR. COOPER: Randy Cooper, Kumbo Tire.

MR. POPIO: Jim Popio, Smithers-Rabena Laboratory.

MS. TUTHILL: Jennifer Tuthill, Natural Resources Canada.

MR. LAMBILLOTTE: Bruce Lambillotte, Smithers Scientific Services.

(Pause.)

MR. MIGUEL: Mike Miguel with the Air Resources Board.

MS. JOHNSTON: Jessica Johnston, Air Resources Board.

MR. AHUJA: Kamal Ahuja, ARB.
MR. CUCU: Mihail Cucu, Air Resource Board.

MR. TUVELL: All right, thank you very much, everyone.

MR. MOHAMED: Hisham Mohamed, NHTSA.

MS. NORBERG: Oh, more people on the phone?

MS. MIRANDA: Ayana Miranda, Maryland Department of the Environment.

MS. NORBERG: All right. Has everybody on the phone introduced themselves at this point?

MR. MOHAMED: Hisham Mohamed, NHTSA.

MS. NORBERG: Last call for phone participants.

MR. LAMBILLOTTE: Bruce Lambillotte, Smithers Scientific.

MS. NORBERG: Great, thank you, Bruce. All right, good morning, everyone. And thank you for that exercise. I'm Tracey Norberg with the Rubber Manufacturers Association. And my purpose in doing that was honestly not to see how well we could all cooperate to go to the microphone, although you all did very well.

I thought, especially given that this may be our last opportunity in a public forum to
share information and ideas on a very important topic for I think all of us in this room, it seemed like it would be helpful for us to understand who everyone is. Many of us know each other, but many of us don't. And it seemed like hopefully that would facilitate an open dialogue as we move forward today. So, thank you for going through that exercise. I appreciate it.

As Ray mentioned, the Rubber Manufacturers Association went through the process of putting together an agenda to try and address all of the major issues that we see in terms of developing a consumer information rating system for consumers on tire efficiency.

And so on the agenda there are three speakers from the tire manufacturing industry. I would like to also point out, though, that there are additional experts from the tire industry in the audience that didn't happen to get their name next to an agenda item.

So we have a number of people here who are truly the experts in their field, and they're here as resources for all of us in discussing these issues today. So, please ask questions.

If the speaker is not necessarily the
appropriate person to ask a certain question, we may elicit someone else's input, because we do have a lot of expertise in the room. And so please indulge us a little bit if we need to call on someone else in the room as questions are asked.

As we go through the presentations we encourage questions, especially clarification on what the speaker is talking about as the presentation is being given. And then maybe if it would help to manage the whole flow of the discussion we can have overall discussion about the presentations after the speaker's concluded.

And then it would really be helpful at the end of the day, if we can all stand it, to have an overall discussion about what all this information tells us, and open questions and next steps. So, in terms of how the process for today would work, that seems to make the most sense.

Just in terms of reviewing the agenda, first we'd like to give an overview of ISO test method. And Dan Guiney from Yokohama Tire Corporation will give that presentation.

Then we'd like to present some data that we have assembled looking at all of the publicly
available data, plus some data that RMA has been able to collect from our members. And Dr. Mark Hawley will be giving that presentation. And he works at ENVIRON Corporation, which RMA has contracted with to do this expert analysis.

And then after that, after Mark has concluded, Gene Petersen will give an overview from the consumer's perspective. And Gene is with Consumers Union that publishes Consumer Reports.

And then after Gene, we'd like to launch into how do we develop a rating system, and what would be helpful to consumers, given the tire information and data. And Tim Robinson from Bridgestone Americas will be sharing that presentation with you.

The last, the final presentation will be given by Mike Wischhusen from Michelin North America. And Mike will be talking about, from the tire manufacturer perspective, how can we get this done. And we will share that information with you last, and then, as I mentioned, we'd like to have an open discussion.

Are there any questions before we get started? Okay. Well, I'd like to introduce Dan Guiney from Yokohama Tire Corporation.
MR. GUINEY: Good morning, everyone.

I'm Director of Technical Service for Yokohama Tire. Our headquarters is in Fullerton, California. So I am a native Californian, just wanted to let you know that.

What I'm going to present today is a very beginning view of everything that I present. And there's certainly a lot of statistic and engineering behind a lot of this that I will not get into.

If there is a need for that in going forward, we would bring other people to address more deeply the engineering and statistics behind a lot of what's presented today.

So my topic is the rolling resistance testing; its state of the art. An overview of ISO 28580, the draft international standard on rolling resistance testing, and the associated uncertainty analysis involved in rolling resistance testing.

The first thing I'd like to do is for everyone's benefit is to help define engineering terminology. It is a bit confusing, I will admit that. Engineers have engineer-speak. And I want to share a little engineer-speak with you, but don't hesitate to use the terms that mean
something to you. But this can help you get at least a foundation in the engineering portion of this.

So, from the standpoint of F-sub-R, or Fr, those are the engineering terms used to describe rolling resistance force. Which is -- this is the definition directly out of the SAE standard for testing of rolling resistance, so it's the exact terminology that's used in that engineering document.

So, rolling resistance force is rolling resistance of a free-rolling tire. And it is the scalar sum of all contact forces tangent to the test surface, which is a road wheel, and parallel to the wheel plane of the tire.

So if you did a force diagram, which we don't have here, you would see exactly what that force vector is.

And in this presentation in other documents you might be reading you will see RRF referred to. So it's okay to use RRF, but it is not the engineering term.

Another one you'll see used, an important one, is C-sub-R, or Cr, and that's rolling resistance coefficient, defined as the
ratio of rolling resistance to the load on the tire. Also in documents you will see RRC.

Now this one's interesting because this one is truly tire energy efficiency. This one is strictly force. So in the terms of tire energy efficiency, the one that we use in the engineering world and in terms of the standards for testing, is C-sub-R. That is uniquely tire energy efficiency.

Okay, let's talk just a little bit about a tire's rolling resistance and what it means. The tires roll under the vehicle's weight. They're shaped as that happens, and the tire is rolling through what we call the footprint or contact area, the tire's being deformed. And since the tire is a viscoelastic body, as it deforms it has a purpose.

And deformation insures traction; it insures comfort. But it also dissipates energy when it's bending, and that turns into heat. So that's where the rolling resistance force comes from. And that's where the tire rolling resistance coefficient's derived from.

So in this area, in the contact area, there's bending that you can see not only
obviously in the sidewall area, but also in the
tread area. The elements are deforming, they're
deforming to take the aggregate of the road.
There's a lot of bending and compression going on
that is consuming energy.

So rolling resistance force is in this
direction. The car is say traveling in this
direction. You can see the F-sub-R is actually
resisting that and going in the opposite direction
of travel. So when we set tangent we mean in this
direction.

So tire rolling resistance is defined as
the energy dissipated by a tire per unit of
distance traveled, so or rolling resistance force,
and can be characterized in terms of efficiency as
C-sub-R, the ratio of the load on the tire -- the
force the tire is -- the resistive force the
tire's generating from bending, divided by the
load of Y.

So the efficiency then becomes how
efficient is any one tire in handling the load
applied on the vehicle in terms of generating
higher or lower force.

So, I see some pained look on some
people's faces. Please, ask questions while we're
going along, because we don't want to not be able
to answer questions.

MR. TUVELL: Ray Tuvell, Energy
Commission.

MR. GUINEY: Sure.

MR. TUVELL: Dan, a couple times in your
presentation you were making the emphasis or the
point that rolling resistance coefficient of C-
sub-R is an energy efficiency measurement. Could
you clarify that?

MR. GUINEY: In terms of the energy
consumed by the tire, the tires carry load to
support the vehicle. So the coefficient is how
efficient in energy consumption per unit load
carried.

MR. TUVELL: Okay. Here's the reason
why I ask. In fact, I have never found anywhere
in any literature that defines rolling resistance
coefficient just the way you used the term.

MR. GUINEY: Other than the SAE
definition. And if you look at the mathematical
formula, the only way to explain, at least the way
I explain it, is that way.

MR. TUVELL: Okay. But that's what I
wanted to clarify. I mean this is an explanation
that you're using, but it is not universally
agreed or understood that rolling resistance
coefficient is defined as an energy term.

MR. GUINEY: Correct.

MR. TUVELL: Okay, thank you.

MR. GUINEY: As far as my knowledge,
that's a true statement.

The measurement methods, let's go next
to measurement methods for rolling resistance. We
list three. Commonly in the USA it's called SAE
J1269. It is a historical test used for many
years in the United States. It is a multipoint
and a single-point test. There are options within
the test that allow you to test at a multiple
group of points to do some things that are
necessary at times. And there's also a single-
point version.

It's commonly used today to characterize
tires and be able to compare between tires for
tire energy efficiency.

Commonly used international standard is
ISO 18164. It is a single-point test-only. And
it has been used widely globally, but not
necessarily in the United States.

The new test that's under development
and shortly to be published is the ISO 28580
global. It's a global standard, as well. It's in
development. It is a single-point test. It is
not -- there are no multiple points tested. A
single appropriate point.

It's a new standard to be used for tire
characterization purposes including, it's very
important at this point in time, to introduce
testing machine alignment.

The other procedures, the 18164 and the
1269 do not address themselves to aligning one
test machine to another. This is the first
procedure that I'm aware of that allows that
particular alignment, and we will go into it in
some detail.

Let's look at the actual tests a bit in
the next slide. Okay. Starting with 1269, again
it's a single-point test. You can see that the
test drum diameter is 1.5. And the smooth or 80
grit means you can use a smooth wheel surface,
which is just bare steel; or you have the option
of putting a texturized surface on there for
different engineering reasons. And both are used.
So they're both allowed.

The reference diameter for correcting
all results depending on your wheel diameter is 1.7 meters. The environment of the test is to be 24 degrees Centigrade with some allowed variation. That's specified. The test speed, 80 kilometers per hour. The test load is defined as 70 percent of the maximum capacity of the tire, as defined on the tire sidewall.

Inflation pressure of the tire is both regulated and it's two different -- depending on whether you're dealing with a standard load tire or an extra load tire, it would be different.

In case of correcting the data, once you make a test, 1269 is corrected for the room temperature. So if there is a room temperature difference within the allowed range, the actual results are corrected for that. There's a temperature equation that is specified in the standard so you can correct the readings for temperature.

There is no alignment procedure.

So as you go across, you will see differences between the two. It's probably not that critical that we -- you can read the chart and see what the differences are, but there are differences between the tests for the purpose of
the engineering that was designed into each test.

A couple of important points is the ISO test is corrected for temperature and drum diameter, both. So there are two corrections for the ISO test. Both of them, the long-standing ISO test and the new standard.

The other thing is, again, as we've said before, this new draft standard ISO 28580 is the first one that has the lab alignment procedure included.

I just want to dwell a little bit on the test machines because it's going to have an impact later on if questions come up about how some uncertainty comes about.

In this test machine, it's a laboratory instrument, okay. It has electrical parts, it has mechanical parts. It has an operator that sets it up and runs it. So in terms of its operation, the speed is controlled, this wheel is controlled by the speed regulation of the motor.

In terms of the load applied in this direction it's controlled by a load cell, either it's actuated mechanically or hydraulically. So there's a control over this.

There is also, in terms of the rolling
resistance force, either a torque cell operating on the main shaft of this wheel. There can be a force transducer on the axle, and there can also be a third variant, can't remember what it is -- power, power consumption by the motor.

So, I just wanted to take a moment to explain in any laboratory instrument there are a number of different mechanical/electrical systems that are being controlled to certain tolerances. And there is an operator interacting with that test instrument.

So, if you can grasp that I think you'll understand better why there is some uncertainty left behind at the end of this presentation.

Next slide. We said there are differences between the test procedures, so one of the questions that could come up is, well, how do we deal with numbers coming off the different tests.

The way we would deal with that is in terms of taking data from both tests and running a correlation study to see how good the correlation is, how tightly they're grouped around any given shape or form. In this case it's a straight-line fit.
This is a correlation of the SAE 1269 test result against the 18164 ISO result. And it's for a number of different passenger size standard load tires. So a lot of test points. But you can see the correlation is quite good. And in the case of where you break all these down by, say, tire categories based on tire size, or tire type or location, we find that if you use all of the points there's about an 18 percent relationship between the two tests. So you can convert one test to the other by an 18 percent transformation.

If you break these down by say size or tire tread pattern or location, then it changes a bit, but it's still -- the correlation is good and it can be dealt with. It might be anywhere from 13 percent translation to a 22 percent translation.

So I think in the engineering community we feel comfortable if we've agreed in prior workshops to consider SAE 1269 as a measurement criteria, we can transition to ISO 28580 with not a -- at least at this point in time, not a great concern about doing that. So we can go back and forth between the two. And someday we'll
standardize on whatever makes the most sense for
the regulation.

Next slide. Okay, now I wanted to
repeat what the ISO 28580 standard is focused on,
and this is the cover page right from the draft
standard. But it is a tire rolling resistance
measurement method. Again, a single-point test.
And a measurement result correlation designed to
facilitate international cooperation possibly
regulation building. For passenger car and
medium/heavy truck and bus tires.

The important thing I wanted to point
out is here it refers to correlation. When I go
into the next few slides we're going to use a word
that's a little easier to understand. I've said
it before, alignment.

Okay, so alignment is a little more
comfortable term for most people in terms of how
do I align with one lab to another so that I can
use results from both.

So, if you will permit, we will talk
about alignment going forward. But it is
actually, what they're talking about is
correlation here.

Next slide. Okay, let's look at the
alignment method now. And I will share with you
what is available and present -- and be able to
answer questions on what's on the slides. Some of
it, because the standard isn't published, I
couldn't just put everything up there, because
it's not public information. But whatever we feel
comfortable that can be shared, or has been shared
prior, we're sharing again now.

So, in terms of alignment the very first
step, and it's a very critical step and I'll
explain why, is a reference lab is picked, Lab R,
that creates two groups of alignment tires.

The first criteria in the standard for
that lab is the reference lab machine
repeatability must be less than or equal to .05
kilograms per ton. Also the two groups picked
must have C-sub-R values or rolling resistance
coefficient and tire size or load index with a
sufficient amount of separation so that this
alignment is fairly stable and has a good meaning
to it.

One of the things I want to point out is
this is a very critical statement, that the
machine repeatability be equal to or below a
specific value.
What that means in engineering-speak is
if a machine is having repeatability issues you
can't go any farther. If a laboratory instrument
is demonstrating repeatability concerns above a
certain level everything else after that, or
analysis of data after that could be coming
from an unstable machine. So there's really no
purpose in going forward.

This is a very critical part of the ISO
standard. So that's one thing you want to always
remember is step one is almost like a rite of
passage. You have to do this before you can go
any farther.

The second part of the standard comes
from the candidate labs, or the labs that are
receiving the reference tires. Could be lab A,
lab B, lab C, whatever. It could be a tire
company lab, could be a private vendor of rolling
resistance testing.

They receive at least two alignment
tires, two groups and two tires in each group.
And the repeatability test is the next thing that
lab does.

So, not only did the reference lab have
to pass that standard before they did anything
else, and establish these groups, the candidate
lab has to do the same test.

In developing the standard the
ingengineering community decided that the candidate
lab must pass a standard of 0.75. So the
reference lab 0.050, candidate lab .075.

Now, there was an allowance -- there's
no allowance provided here if this standard isn't
met. If the reference lab doesn't meet that
standard they got to work on the machine. They
got to figure out what is causing repeatability
issues and go back and correct those until they
achieve this.

So, the candidate lab, there was an
allowance added that if 0.75 is exceeded there was
one option put in that additional repeats can be
done on the reference tires, replicate testing,
test the same tire many times, to try to bring
down that variability and uncertainty around any
given test result.

But that's obviously done at a cost
penalty for the lab. And I'm sure that while this
is in there, there could be a decision made in any
given lab to do what the reference lab does, and
that's find the source of the repeatability issue
and correct the electrical/mechanical issues going on.

So, once now the candidate lab has their measurements completed and have passed the standard, they derive a linear alignment formula just in the standard formula of Y equal AX plus B. In the case of each lab we're going to look at, how that's done in some of the next slides.

Finally, the standard requires that these candidate labs, once they've completed their testing and they have this alignment formula, they must report to their customer, whoever's asking for the data, aligned results.

So the standard goes another step forward. Even though I know the alignment, I must now correct or transform my test results to aligned results. So that us in the community of customers can say we have some relative ground here of commonality between any lab that's providing the data.

Had the standard stopped short of this you wouldn't necessarily know the alignment had been applied. But it does go on and say specifically that any test results provided by this laboratory, these candidate labs, must be
aligned results.

Okay, so let's get into -- oh, you know what happened, Tracey? When you put the RMA format on it moved my lines around. But that's okay.

In your copies I hope you have -- it's a shame, but anyhow, let me --

(Parties speaking simultaneously.)

MR. GUINEY: -- explain what went on here. I created a format without the cover text. When you slap the cover text on, it moves slides around. And what happens is the nice little graphics got messed up.

But anyhow, this line, this blue line is supposed to be right here. This blue line is supposed to be right here for a visual aid, only. This red line is supposed to be here, and this red line is supposed to be here.

So what do we have now? What have we plotted here? Okay, well, this is step one of that candidate lab's responsibility. This is where the candidate lab -- and this is real data done by real testing labs to the ISO 28580 standard. This is the real deal going on here. This isn't hypothetical data, it's real data.
So, the standard reference tire is described as a rugged trail TA, that's the tire model. And that's alignment tire one. Tire paw AWP is alignment tire two. And these are different in terms of their rolling resistance coefficient, as we mentioned, in terms of their size tire.

You can see the rugged trail TA generally is in this range, and that the -- for both labs. And that the tire paw AWP is at a lower level.

So let's look now at lab B and the reference lab that created lab B's tires for an example. These are the actual results.

So the reference lab results -- sorry, I'm shaking a bit, but that's my own hands -- these are the three results on three tires -- excuse me, one tire tested three times. So it's a single tire tested three times. Rugged trail TA, one tire, three repeats of the same tire at the reference lab.

This is three, the same exact three tires tested at lab B. So the tires were actually moved between the labs and tested, the exact same tire, tested -- one tire test repeated three
So what you can see here, of course the blue line should be here, is the different result between unaligned between the two labs. What's involved here is the repeatability of the machine testing the same tire three times.

Okay, now in the case of lab H, same tire model, but a different tire. This is the reference lab result, and this is the candidate lab result. So you can see that the disagreement was in a different direction for lab H, it wasn't in the same direction. So the relatively alignment between the two labs is different.

Again, if you go to the second alignment tire, the reference lab is here, the candidate lab is here. So, this is their alignment difference. This is the machine variation testing one tire three times.

And I'm sorry it's covered up because everything slid around, but this is the reference lab for lab H. And they have a relatively no misalignment at all, just on the first test.

So now what do we do with this information? Well, that's where that linear alignment formula is created. So, they take --
lab B will take this result for their results, and they know the results from the reference lab. They will take this result for their result and they know these results from the reference lab, and they just do an XY fit of that data to come up with a linear line through those two data points. So you plot the reference lab on the X axis, and you plot the candidate lab on the Y axis, and you just draw a best fit line through them.

What happens is you can then come up with two different parts to the formula. B is the offset between the labs if the load was taken to zero. A is the relative gain, or the slope of the line, between the two labs. So knowing both the offset and the gain, lab B can now align itself to the reference lab.

So, if you have any questions about this part, this is step one, real data. The important thing to see here is the two labs testing, the test results are different. The other thing is to see that the repeatability of the machines are not exactly the same.

Important point. The reference in all cases, even though this amount of variability that
you see, the reference lab must pass the same
standard. So whatever variability it was
experiencing when it developed these tires, it
still passed this requirement. So its
repeatability was correct.

MR. PETERSEN: Dan, Gene Petersen with
Consumers Report.

MR. TUVELL: Gene, could I ask you to
come to the speakerphone.

MR. PETERSEN: The question I have is in
the selection of the tires. Of course, I think
you want a large enough span so you have a pretty
good correction factor or linear regression. How
did they go about choosing these tires? Is it as
a result of that span that they're looking for?
Or is there some other consideration?

MR. GUINEY: According to the standard
it is the span.

MR. PETERSEN: Okay.

MR. GUINEY: So in the standard there's
not an additional prescription; it only prescribes
that the two tires need to be separated by a given
amount of rolling resistance coefficient.

MR. PETERSEN: Okay. So my second
question is the tires that are tested, they must
fall within this span to utilize this correction?

MR. GUINEY: They must be at least that
-- it must be at least the specified distance
apart. It could be more, but it can't be less.

So, -- I don't have it in the
presentation, but I think the standard for
passenger is 3 kilograms per ton.

MR. PETERSEN: Okay.

MR. GUINEY: That's the minimum distance
that they have to be separated by to be allowed
reference tires.

MR. PETERSEN: And while I'm up here, I
understand this is a proposal.

MR. GUINEY: Yes.

MR. PETERSEN: Is there any sense as to
what stage it lies in right now? Would you know
about that?

MR. GUINEY: Some -- I think we're
close, but I'll let somebody else answer that.

MR. ROBINSON: Yes, Tim Robinson from
Bridgestone. And our company is sponsoring the
development and supply of the ARRT tires.

And to answer your question, Dan's
exactly right, the span of rolling resistance
coefficient will be sufficient to cover any
foreseeable range within the market of what we see now in the U.S. as far as rolling resistance coefficient for force is concerned.

In addition to that, those tires are also developed, so they also covered the total range of load indices, the load carrying capacity for radial passenger car tires.

MR. TUVELL: Ray Tuvell with the Energy Commission. Thanks, Tim. Just for clarification purposes, and I want you to correct me if I'm wrong.

So Dan has referred to the reference tires that are specific to the 28580 protocol. And the important point here is that Bridgestone made specific reference tires for that purpose.

MR. ROBINSON: Right.

MR. TUVELL: These are not just tires pulled off the street and used. They are designed and built specifically to be reference tires for the ISO 28580 process.

And so I just wanted to ask the question, I believe it's understood that those tires, in fact, have been produced and are currently available, is that correct, Tim?

MR. ROBINSON: They have been produced
and they will be available. We had to scale up
production to align with the release of the ISO
28580 standard.

But the other purpose of these ARRT
tires is to make sure that they are consistent as
possible. So they will be built under controlled
conditions such that we remove as much tire
variability as possible.

So what you'll be seeing in the lab
alignment is really a test repeatability, not tire
variation.

MR. GUINEY: So, it is a little
complicated sometimes. Good point, good point,
Ray.

MR. MEIER: It's Alan Meier, Lawrence
Berkeley Lab. I'm curious, what's the sigma on
these reference tires? I mean it was less than
that, but what was it actually?

MR. GUINEY: Honestly, I don't know. It
was not reported. But we do know that it was
below it. And when the standard's published, I'm
not sure what the policy is, but the research
behind it, I'm not sure what happens with all of
the research behind it, all I can say is it passed
that standard.
MR. MEIER: I'm just trying to look at that range and especially the BR. Seems like it's a fairly wide range.

MR. GUINEY: You actually have to look at data and derive the data to --

MR. MEIER: Yeah, I know. But there are only three tires, so it's hard to --

MR. GUINEY: Yeah, right, exactly.

MR. TUVELL: Ray Tuvell with the Energy Commission. I want to make a comment, also, about the sigma, the .05 and the .075 standard deviation, and please clarify or correct me if I'm wrong about this.

For passenger tires we would expect to see rolling resistance coefficients in a range of 6 to 15, roughly, spans, rolling resistance coefficients we would expect to see passenger tires, all passenger tires in the current marketplace falling roughly within that range, for the sake of argument.

And that being the case, then the .05 that we're seeing there is an accuracy of better than 1 percent. And the .075 slightly more than 1 percent.

And I just offer that explanation to put
this in context. Those are standard deviation
numbers, but we're talking about fairly accurate
standard deviations here. We're down in the 1
percent range of accuracy, which is very very
important to this subject.

MR. WISCHHUSEN: Excuse me, Mike
Wischhusen, Michelin. Two points. Gene asked a
question that didn't get answered yet. The status
of the ISO 28580 is nearing the final stages of
its approval. We anticipate final approval toward
October of this year. So it's on the path and
it's on its way.

Second point. Recall these
measurements, I believe, were they done with -- I
don't know, excuse me -- the range Ray is talking
about, the 6 to 15, those are measurements using
J1269, okay.

So remember Dan's slide three or four
slides ago about the offset between SAE measures
and ISO measures. So that range, those numbers
will change. It'll be a simple offset, but it
won't be the number six and it won't be the number
15 when we're actually testing the 28580.

MR. GUINEY: That's correct.

So we -- go ahead, sure.
MR. TUVELL: Ray Tuell, Energy Commission. I appreciate that clarification, Mike. The point I was trying to use it to illustrate that range was the level of accuracy of the -- we're still talking in the 1 percent range. Thank you.

MR. GUINEY: Yeah, that is an important point. The foundation for everything we do from here on is -- oh, I'm sorry -- the foundation for everything we do from here on out is based on meeting these requirements. Very important point.

So I think we can go to the next slide. Yeah. It's in the right place, but I know something else will be out of line. But, anyhow.

This now is step two. So what's happened in step two? Step one we got the alignment formula finished. Step two is, in the case of the development of the standard 28580.

Both lab, the reference lab H and the candidate lab B, reference lab created eight additional groups of tires in different tread patterns, different load indexes, different aspect ratios, different ODs, different rim diameters, different speed ratings, to try to get as much dispersion as possible to actually apply the
standard across the range.

So these models now are three tires in each model tested once. On the reference -- creating the reference line we tested one tire three times. And then put a line through it to come up with the alignment equation.

So what you're seeing here now let's just talk about the A349G tire. You're seeing that lab H got a rolling resistance coefficient from the three tires tested once in this range.

When the tires were shipped to lab B, they got an answer in this range.

So now we have eight different estimates of how much difference there can be in between machines. So we have some that have a relatively larger difference; some that have a relatively smaller difference. The only thing changing, since it was the same machine, is the tire sample or population, itself.

So three tires in each one of these were tested one time, and this is the data derived from it.

So what you can see is that this is unaligned data. We would like to be able to align this and actually bring these differences down so
that lab B and lab H are on a common footing based
on a linear alignment between the two labs.

What's not in here, it's important to
say, this is strictly machine alignment. There is
no alignment for product variation. So, if the
three different tires from this model, A349G, have
product variation. So we are not aligning product
variation. We are only aligning machine
variation. That's another important point.

Okay, go to the next slide. Don't hit
the button yet. Now, what's happened in this step
is we've actually taken this data from the prior
slide and we've applied the alignment equation to
it. So this is now aligned data.

So however the linear alignment formula
was calculated, it's now been applied to the data,
and that disagreement has been removed.

And what you can see is now not all the
lines are pointing in the same direction, which is
the alignment formula at work. So, all the lines
before were going in this direction. And some
still do. But because of the alignment, some --
because of the improvement in alignment, some of
the lines go in a different direction. So they're
actually a different relationship now.
But, as you can see, there is still some residual misalignment. You cannot come up with, in terms of an alignment method that will remove every bit of machine alignment. But a lot of the alignment was addressed. Certainly the large portion of it. I think in this case, we can get down to the formula here, but this residual alignment or disagreement in any one tire model is going to exist, even after alignment.

So what we have to do to get to something that we call in the engineering world as the uncertainty around any given test measurement after alignment is we take the average misalignment and calculate average misalignment after alignment. And that is this term in the uncertainty equation.

So the average residual misalignment in all eight models is .08. I don't have up here what it was before alignment, but it was in the neighborhood of .5. So this number, -- just under .5 if I remember correctly. The alignment has improved the average misalignment by a factor of five or six or seven.

The next thing you do to calculate uncertainty is you take the variability of all of
these misalignments. Remember the first thing was the average misalignment. That's this number.

The second thing you do in engineering terms to calculate uncertainty is you take the variability of these alignments, that's this term, .24. That becomes the standard deviation. When you take 1.96 times the standard deviation you describe 95 percent of the population that that variability was derived from.

So the total uncertainty remaining after alignment is .56. .08 of it came from the average misalignment of these data points that remained after we aligned the machines. And .24 times 1.96 gives us 95 percent confidence, or 95 percent of the total population of the variability of these alignments. I know it's a little bit hard to understand.

So the uncertainty around any given test point now, or of the alignment, because lab B is going to be reporting data, in this case for these models tested, is .56.

How do we then evaluate for data reporting? How do we deal with this uncertainty? How can engineers deal with that remaining uncertainty?
Well, the way we deal with it is we kind of look at categorizing test results, categorical treatment of data.

So what the ISO committee did was they said what would be an appropriate way of defining the category or bin width around which data is reported, such that this uncertainty can be dealt with. And while I don't present it here, you've now taken and gone to a question about is you have this uncertainty around test data as you move closer to an upper limit or a lower limit.

Say a maximum bin rating, or a lower limit bin rating, what is the risk as you approach that bin width. To do that, the engineers came and did studies and found out that basically when you get to a total of five sigma, two sigma was used in the uncertainty analysis but when you get to five sigma the risk associated with getting close to a bin limit, an upper limit or a lower limit, is low enough that it's appropriate to stop at five sigma.

So, what we do to get the total bin width is we multiply this uncertainty, which is .56, times 5 divided by 2. 5 sigma, but we already used sigma here, so the remaining
multiplier is 5 divided by 2. Okay. A lot of engineering terms.

But this ends up being the bin width. So, .39 is, if you were going to accept, and you have to accept that there's uncertainty remaining in these test results, this particular testing of eight models, three tires each, at two different labs with say that a bin width of 1.39 kilograms per ton or rolling resistance coefficient, would allow you to be confident that you could contain these different ratings in bins that are this wide. About 1.39.

So what happens is, and you can hit the -- as that bin width would move you can include different tires in the model.

So, for example, here now you can include these two within this bin width and be confident that they are in that bin.

But if you had a test result that was very close to the bin limit, the risk would go up. You could, in fact, as you get closer to the bin limit, because of the uncertainty that's there, actually have a true value that's outside the bin. So engineers use categorical information to deal with uncertainty.
So, just to sum up, the ISO 28580 deals with lab alignment. And the way it was dealt with is through a linear fit. So this is aligned data, but there is, even with that alignment we need to make sure that it's recognized that there is residual uncertainty around any given test result from any given tire. From a machine that met the limits on repeatability, from an aligned result, there's still residual uncertainty.

You cannot be sure that any one of these test values is exactly in that point. And it's described in statistics this way. At a future meeting we could go into how this is all derived and bring a much more knowledgeable person than I here, how to do this. But in essence, we are including a total of 5 sigma plus the average misalignment that remains to get to this bin width.

Question.

MR. TUVELL: Rick, Ray Tuvell with the Energy Commission. Now, I'm pretty sure I don't have the current draft version of 28580, and so my questions are going to go to that.

The last version I had had no mention whatsoever of anything associated with bin widths.
MR. GUINEY: No, the standard, it does not address itself. It's the derivation of the standard that we needed to review these issues to derive the standard.

MR. TUVELL: Okay. I just wanted to clarify that. So, --

MR. GUINEY: That's correct.

MR. TUVELL: -- and it's not anticipated that even in the final version of 28580 there's going to be any mention of this subject of bin width or anything of the sort?

MR. GUINEY: None whatsoever.

MR. TUVELL: Okay, good. Now, let me see if I understand these numbers correctly and can get them in context. And I believe I do.

So, the -- but please correct me, and that's why I'm asking this. The 1.39 you're using there is essentially a rolling resistance coefficient unit.

MR. GUINEY: Exactly.

MR. TUVELL: Okay. And so back to my comment about the range of numbers that we would expect to see in passenger-type tires. Again, with Mike's correction of what 28580 will do in shifting things, if I'm dealing with numbers in
the 6 the lowest to 15 in the highest, that 1.39
that you're using when applied to like a 6 is
talking about what, 20-plus percent variation in a
tire?

In other words, if I measured a tire and
its rolling resistance coefficient turns out to be
around 6, you're claiming that the bin width, the
level of accuracy around a number like that is
1.39 around it, which is on the order of a 20-
percent-plus error rate.

MR. GUINEY: And I mentioned something
that is involved that maybe isn't quite
understood, okay. The absolute uncertainty is
.56. But what the engineer needs to do is in
order to report any data, he needs to know the
risk of reporting that number associated to some
requirement.

So, to answer your question directly,
because, if you told the engineer, I want a tire
that is below 9, recognizing this uncertainty, his
next question would be, what is the risk that
you're willing to tolerate to be wrong.

So, added into this is this risk factor.
Its 1.39 includes both the absolute uncertainty
plus, we decided, I think it was a 5 percent risk
is tolerable to be off of the actual limit that you specified.

So the bin has say an upper limit of, let's say the bin has an upper limit of 10, down to 8.5. As I'm operating in the middle of this bin there's very low risk that I'm outside that actual bin, that category, saying it's a 8, like a one-star tire, or two-star, a three-star tire, whatever number category you want to call it.

As you approach the limit of that category the risk goes up substantially that you're not in that bin anymore. So, to answer your question directly, the uncertainty plus the risk associated with being wrong is what derives the 1.39.

MR. TUVELL: Okay. Ray Tuvell, again, with the Energy Commission. Here's why I'm going with this, Dan. You took a leap to the bin here that I'm having a hard time going to. I'm back here with I've got a machine, either reference of a candidate machine. I ran a test tire. I came up with a number that I then calculated as being, for the sake of argument, a 6.0 rolling resistance coefficient.

Now, the level of accuracy on 28580 for
my candidate machine said I'm within 1 percent one way or the other. Because I had the three tire test repeatability that I had to prove within 1 percent.

So right now I know I'm within 1 percent.

MR. GUINEY: On the --

MR. TUVELL: On the tire.

MR. GUINEY: On the reference tire only.

MR. TUVELL: Well, on the reference tire it's a .05, and so it's better than 1 percent, on the reference lab. And then the candidate facility it's .075. So I'm still within 1 percent.

MR. GUINEY: Right. But, --

MR. TUVELL: And so I know my machine by 28580 is giving me numbers that are accurate within 1 percent.

MR. GUINEY: Yes, yes, that's true. But you also have to remember that the machine will interact with any given tire that's applied to it. So, in the case -- that's why we picked a broad range of rolling resistance values. We also picked a broad range of tire types.

And the machine repeatability may change
a bit depending on the tire that's applied. But your statement is true. For the reference tire test, for the rugged trail TA and the AWP, three repeats on that machine, it was below that number. But the machine, itself, could change, that repeatability could change a bit depending on which tire you put on that machine.

I know it's complicated, but 1 percent isn't just the -- isn't just the absolute number.

MR. TUVELL: And you're saying that this is based on three tests on the same tire that you have this data?

MR. GUINEY: No, this is just -- no, this is, now when we got to this chart it was three tires, one test each.

MR. TUVELL: Okay. So now it's becoming better for me to understand. So the variability could well be tire to tire to tire. The three tires, themselves, could be the variability not the test machine?

MR. GUINEY: Not in here. No. That variability that you just mentioned is not included in this analysis. It's excluded from this analysis.

MR. TUVELL: You see where I'm having a
hard time with this? I mean I'm starting out with
an ISO 28580 test process that basically insures 1
percent accuracy. And somehow it leapt to close
to 20 percent of a problem.

MR. GUINEY: Yeah. And, Ray, I do fully
appreciate that it is somewhat hard to understand.
And I think our hope would be that we would have a
meeting on that very subject and get there.

MR. TUVELL: Well, yeah, I mean this is
important. I mean should such a problem exist, I
would have expected this to have been revealed in
the 28580 process. And I would have expected that
the people on the committee would say this is
unacceptable, to stop at this point, we need to
hone this down.

MR. GUINEY: The purpose of the
committee was to establish a test standard, not
how to apply the test standard to produce ratings.
That's what we're getting into now. How do you
take a test standard and apply it meaningfully to
a rating system. That's not up to ISO 28580.
It's up to another -- this community or group,
whatever we're going to do.

MR. TUVELL: Well, maybe that's the
clarification then that I have to hear. I thought
that your presentation was specifically designed to talk about the accuracy of the testing process.

MR. GUINEY: And it does, yes, that's true.

MR. TUVELL: Okay, but I think what I'm hearing you saying is now you're taking the leap on this slide to applying it to creating a bin system. And that's where, I think, we're -- my confusion is arising.

MR. WISCHHUSEN: Can I have the mic?

Mike Wischhusen, Michelin.

A couple points. We got to remember what a standard is. I mean Dan said a standard sets a test procedure. A standard does not create a measurement system for a regulation. I mean let's remember what 28580 is.

28580 gives us a tool from which we can create a regulation. Okay. That's the role that the ISO standard plays.

Now, part of your issue, you're jumping from what you're perceiving as a 1 percent tolerance or error band around an individual measurement. This is addressing measurements on two different machines in two different laboratories. Okay. And I mean, that's just a
fact of life. Two different machines don't
measure the same number.

So what this analysis is addressing is
how we, as users of the standard, now have to take
into account the fact that those two laboratories
don't measure the same number. I mean that's what
we're doing.

It's also an error to look at that 139
as an error, or an inaccuracy in the system. It's
simply a statement of fact. It's a probability,
you know, how sure am I that the number I state is
the actual measurement, okay.

So, even -- forget the concept of bins,
okay. If you report a 6.0, okay, that 1.39 is
then a measure of a certainty you have that 6.0 is
the correct number. It doesn't say your number is
between 4.6 and 7.4. That's not what that number
says. It's not an error band.

MR. GUINEY: And let me repeat what it
does relate to. The uncertainty around any given
test result on this, the residual uncertainty
around any given test result on this chart, at a
95 percent confidence limit, 5 percent chance of
being wrong, is .56.

But, when you ask the engineer the
question is how certain are you where it is in relation to some type of a standard or a rating, he has to add in the risk with which you could be wrong on top of this.

That's where we went from 2 sigma to 5 sigma. To lower the risk to an acceptable level such that when I report my rating, not the actual test result, the only way I can deal with all this uncertainty and risk is to give you where I think it lies with a 5 percent chance of being wrong.

So, that's where this concept of -- you got to deal with it categorically. You cannot easily deal with it numerically. You have to deal with it categorically because of these issues, which are real issues, in being wrong with what you told someone.

MR. TONACHEL: This is Luke Tonachel from NRDC. I wondered if I could go back to Mike Wischhusen's comment, that, Mike, if you could just help me understand.

You mentioned that 1.39 doesn't mean, it's not an error band. If you could provide sort of an interpretation of what that 1.39 means?

MR. WISCHHUSEN: Yeah, I'm probably the wrong person to do that. I think, you know, we --
let's do a little bit of a sanity check here, okay.

We're not statisticians, okay. The statisticians did this work. I just have the feeling we're spinning our wheels by questioning the statisticians' work, okay.

But, I mean anybody who has any experience with laboratory measurements, technical measurements, scientific measurements, you know, the concept of uncertainty is there. I mean you simply cannot say I measured 6, therefore it is 6. I mean that is a concept that has existed in the technical world since we've been making measurements.

And I think perhaps what is needed is a statistical expert to explain this stuff to us. Because I take it there are no statisticians in the room, because no one's jumping up to explain this.

MR. TONACHEL: Yeah, I guess, I appreciate that, Mike. The thing that I'm trying to get to is that ultimately this comes down to what does people -- everything is going to have some level of uncertainty in it -- and what is the level of uncertainty that people are comfortable
with under different types of rating scenarios.

MR. MEIER: This is Alan Meier. I have
a couple questions here. First of all, I
appreciate the presentation today. I think it's
wonderful. We can actually focus on the real
question.

First of all, let me make sure I
understand it. Those uncertainties are based on
three tire tests, is that correct?

MR. GUINEY: Yeah. Now, you have to
remember the formula is the average misalignment
remaining, which is .08. So you take all eight of
these and you average -- you take the average
misalignment between the two labs, that's the .08.
And then you take the variability of the
misalignment, that's the .24. And you multiply it
by 1.96 to get the 95 percent calculation of -- or
5 percent not explained.

So we have not included product
variation in this. Product variation is excluded.
It is strictly the average misalignment plus the
variability of misalignment, not the variability
in this box, itself.

Because you want to know what is the
uncertainty with regard to the lab. Not throwing
in product variation.

MR. MEIER: So if we increase the number of tires in each of those samples, does that increase -- decrease the uncertainty?

MR. GUINEY: No. What it could do is it could -- this very uncertainty we're talking about is where is the center of the proxes CT01 tire. Where -- if you had 100 of these, or 200 of these, where --

MR. MEIER: I understand.

MR. GUINEY: -- where is the central value for that tire model. If you increased from three to 20, you're going to get a much better description of where that central point is.

So all you would do is you may improve the alignment, the average alignment number. And you may slightly change the average alignment -- or the variability of the alignment.

MR. MEIER: Okay. I'm going to come back to that one later. But, what if -- I guess the next question is you assumed kind of a normal distribution.

An alternative approach would be to say how confident can I be that the number that I report is less than, the actual value is less than
what I report.

MR. GUINEY: Yes, okay.

MR. MEIER: Which would, I think, if I understand my -- sub statistics, then I don't need to think about so much a normal, as more of a one-tailed distribution and other kinds of requirements can apply. And actually you can use a much -- you actually have less uncertainty, or more confidence about the value reporting.

So that if you avoid this bin approach and just say how confident can I be that the number is below the number that I'm reporting, then you actually have a greater certainty.

MR. GUINEY: Yeah, and that's what we talk about in terms of you've got to ask the engineer how certain are you with respect to some number.

MR. MEIER: Yeah.

MR. GUINEY: So the bin only is derived from, can you tell me, is it below that or above that.

MR. MEIER: Yeah, but --

MR. GUINEY: And he'll say -- he'll say --

MR. MEIER: But just sort of for the
record, if you don't go the bin route and say how confident can I be that the reported value, the actual value is less than the reported value. Then your confidence increases with the same data, because you don't have to worry about the other side of the distribution. You don't have to worry about it being --

MR. GUINEY: What is the risk that the tire is over-graded is basically what you're saying?

MR. MEIER: Yes, yes.

MR. GUINEY: And you can do it that way.

MR. MEIER: Yes. And then your certainty increases, probably doubles.

MR. GUINEY: Well, if you use the 5 sigma limit you're going to end up -- that answer's going to be half of this bin width.

MR. MEIER: We'll talk about that later.

MR. GUINEY: Yeah.

MR. WISCHHUSEN: Mike Wischhusen, Michelin, again. Just make a comment, try to -- let's put this all in context.

You know, we're here discussing AB-844, which mandates the creation of a consumer information system about the impact of tires on
vehicles' fuel efficiency.

No one loves a rousing discussion about statistics more than I do, but let's keep in mind the big picture here, what we are here to do. And not get sidetracked about, you know, some very very small effects on what we're doing. Because there's a lot of information to be presented today. And we're not making a lot of headway getting through it. Thanks.

MR. GUINEY: Anyhow, we can go to the next slide.

MR. TUVELL: I have a comment first.

MR. GUINEY: What we want to do is share with you another lab pair, just so you had two examples of this, not just one.

MR. TUVELL: Yeah, can I just make one more comment. And I appreciate your comment, Mike, but whether we like it or not in 844 it also directs us to adopt a test protocol. And significant to the test protocol is we're all homing in one 28580.

And if there's some representation that 28580 yields numbers that have a high span, or in other words a low degree of accuracy, we all need to know that.
Now, I'm not a statistical expert, either. And I don't pretend to be. But I look at the information that's being presented today, and I'm interpreting that as a very high degree of variability.

And this is the first time I've seen anything that even remotely suggests that on 28580. That I've always been led to believe, in fact, it's the exact opposite. It's the exact opposite, that they worked so hard to refine it to insure a very very low level of variability. Not only repeatability in individual labs, but lab-to-lab variability.

And so I think maybe what's happening here is the subject is being complicated by reducing it to a statistical, you know, analyses, and you recognize that. I certainly recognize that.

But I'd love to get people from the 28580 committee who's responsible for this lab-to-lab variation issue and sit down with them and say, guys, how did you resolve this and what did you come up with. Why did you stop where you are now on this and say let's go ahead and adopt this standard.
MR. GUINEY: And to speak on behalf of -- I was at some of the meetings and understood what they did. They were responsible to come up with a test protocol that allowed single-point testing, and would address lab alignment. And they finished their work.

This issue that we're talking about here comes into once you take those results and apply them to some standard or some requirement, the uncertainty with which being correct results.

And people holding, again, the tire manufacturers accountable for being right. Because that will happen, I guarantee you we will be held accountable for being correct.

And this analysis just gives you a little glimpse -- I know it's complicated and I apologize -- it gives you a little glimpse of the uncertainty that engineers have to deal with to give you the correct answer and be accountable for it.

We just went to another lab pair so you knew we didn't just cherrypick the best lab here. But, anyhow, here's --

DR. WADDELL: I have a question on the last slide before we --
MR. GUINEY: Sure. No, I'm sorry, I'm sorry.

DR. WADDELL: -- proceed. Walter Waddell, Exxon Mobil. What it looks to me, forgetting all of these statistics, because I do that on my computer, is we've drawn up a bin shown here in pink for the worst tire out of the eight, comparing only two labs for three tires. And that really was Alan Meier's question, is you need more data, more tire brands or more labs to narrow the window. Not more repeats of the process.

MR. GUINEY: No. If that was the impression, this is the composite of all eight of working, not just one.

DR. WADDELL: I understand that. But what I'm looking at here is you got the worst tire; you doubled its error limits, call that a band. And you've doubled the error limits based only on two labs for one tire.

MR. GUINEY: No. These calculations are based on --

DR. WADDELL: I understand all the calculation --

MR. GUINEY: -- all eight tires --

DR. WADDELL: -- arguments, okay. But
That band width is 1.5.

MR. GUINEY: Yeah.

DR. WADDELL: Nowhere in the calculations does it say that. So Alan Meier says you got to narrow that 1.39 by more testing. And you talked about testing the worst tire. We're saying you need to have more labs test the same tires, and more labs test more different tires to find out what the real variability is.

MR. GUINEY: Yeah, you --

DR. WADDELL: Because you've already addressed the machine. And this now introduces the tire variability.

MR. GUINEY: Yeah, the cost associated with any testing schemes to reduce uncertainty can be dealt with at a future meeting. This is just an example of what was done to decide what is the best way forward in aligning labs, and to meet the purposes of a good alignment procedure.

DR. WADDELL: Right, but I'm saying I look at a picture whose band width is twice the worst tire of merely two labs.

MR. GUINEY: Yeah, you'll have to honestly dig into the statistics because that is, in fact, when you look at all of these and you
look at how these formulas are derived, that is,
in fact, what is contained in all of this testing.

Now, so I understand your
interpretation, but in fact it's based on all this
data. It is not based on just the worst tire.

DR. WADDELL: But visually that's what I see.

MR. GUINEY: I understand visually. I mean I can't help what happens in actuality. I'm just explaining how it's derived. Visually you can come to that conclusion, but in fact it's derived from all this data.

Now, go ahead. It's the same, I just wanted to show you -- forget that -- that was lab FL doing its alignment work. This is lab F-L -- go forward -- this is lab F-L doing the same alignment work. Sorry the arrows aren't in the right place. Came up with their equation; made sure that their machines were where they needed to be.

Go to the next one. Unaligned data showing the raw unaligned lab disagreement. Next slide. And the uncertainty was a little better between the lab pair F and L. It was down to .51. And the total uncertainty plus the risk of being
wrong, or this relative bin width is at 1.28.

That's the -- I just want to conclude, since I'm taking a long time, I want to just give you the basic conclusions. Next slide. You can go past that, because we already --

So, C-sub-R is an appropriate characteristic to analyze and categorize tire rolling resistance information. ISO 28580 provides an effective methodology for aligning labs based on C-sub-R. And the aligned results are required to be reported.

But a very important point is some amount of variation lab to lab, and within lab, remains after alignment and creates uncertainty. That residual misalignment lab to lab and within lab creates this uncertainty number we have to deal with.

All we're saying is the way we typically deal with that in the tire industry is to apply categorical ratings, not actual numerical numbers. And we can discuss that further at a future workshop, or whatever you propose.

And then the presentations following will help demonstrate how categorical ratings can effectively avoid some of the issues that have
been raised in prior workshops about customer or
consumer confusion. And bring up an issue of how
we avoid some potentially inappropriate tire
selections that could occur if you do not use
categorical ratings.

So, we've had plenty of questions,
plenty of discussion. Sorry it took so long, but
that's the nature of the beast. Thank you.

MR. TUVELL: I just have sort of an
impromptu slide that I want to present that helps
illustrate my confusion on this subject, if you
don't mind.

(Pause.)

MR. TUVELL: I appreciate your patience
dealing with this. This sort of came up at the
last minute. We weren't necessarily expecting to
show this. So it wasn't we rehearsed this. For
some reason it's now showing correctly.

MR. GOTTLIEB: Dan, Dan, Adam Gottlieb
with the Energy Commission. You are using the
term "they" when referring to the ISO 28580. Can
you identify who they are, who is the amorphous
group that defines or that makes this
determination?

MR. GUINEY: I have to go back -- I'd
have to go back to the actual participant list.

But it was --

MR. GOTTLIEB: Is it a U.S. group, is it a federal group, is it --

MR. GUINEY: No. It's a global tire industry group.

MR. WISCHHUSEN: Tires, vehicle makers, testing. I mean it's not limited to the tire industry.

MR. GUINEY: No, yeah, it's not. It's the global -- in the case of 28580 it's the global community interested in that.

MR. MEIER: May I ask some questions while they're getting this fixed up? This is Alan Meier.

So, first of all, we were having a side discussion there. For the moment assuming that there were bins, are you suggesting that the bin size should be the same through the statistics?

MR. GUINEY: Later on we will share some information in another presentation that kind of shows our concept of how that could help the consumer make a choice.

So that, say, for example, I wanted to choose tire A versus tire B. Tire A being in a
better energy category than tire B. And maybe a third or fourth category above that.

We were looking at constant bin widths to help have relatively constant amount of fuel economy difference as you move between the different bin widths.

Because the customer is interest, I guess, in my opinion, in miles per gallon on got on my car after I bought your tires. So we were thinking that if we used the constant bin width it's going to be more simple to present to him what fuel economy benefit is he going to gain by picking tires in different bins.

And it would be relatively constant between the different bins.

MR. MEIER: Thanks. This is a slightly unrelated question, but maybe you know the answer. When the automobile manufacturers request rolling resistance data from the tire manufacturers, how many tires do they request being tested?

MR. GUINEY: I'm not the best one to ask. I know in our case it varies depending on the maker. I think the minimum I've ever seen is three per test group. But it does go higher.

Anybody else? Tim.
MR. ROBINSON: Yeah, typically it's three; it can be higher -- always usually basically --

MR. TUVELL: Can you come to the mic?

MR. ROBINSON: Sure. Yeah, Tim Robinson from Bridgestone. Typically it's three at a minimum. Sometimes it can be more depending upon the repeatability, variability of your testing. But in every case their targets are typically set based upon rolling resistance coefficient as opposed to rolling resistance force. We'll get into that a little bit later.

MR. MEIER: But no manufacturers require more than three?

MR. ROBINSON: I'm sorry?

MR. MEIER: All manufacturers are just about three? There's none that are greater than three that you're aware of?

MR. ROBINSON: There could be some that are greater than three. Basically though it's typically three.

MR. MEIER: Okay. Thank you.

MR. TUVELL: Mike, I grabbed this off the internet. It's a Michelin presentation. You see the date there. I don't know exactly where --
the context of it. And so bear with me here. I
want to go towards a slide at the end.

Having a slow time catching up, hold on.

(Pause.)

MR. TUVELL: It appears that we're not
going to be able to get this to come up. We'll
work on it during lunchtime so I can show you --
find a way to get it up so I can illustrate the
point. I appreciate everyone's patience.

MS. NORBERG: While we're getting the
presentation up, just as a time check I know we're
at 11:35 a.m. We were way too -- to discuss an
important subject. But I just wanted to check
with everyone in the audience, given that we're
getting near the noon hour, do we want to -- I
mean is it all right if we -- if this goes an hour
or 45 minutes, are we good without taking the
lunch break now? Is everybody comfortable with
that?

Yeah. No one looks like they're dying.
Okay. I just wanted to check, thank you.

(Pause.)

DR. HAWLEY: Thank you for getting the
PowerPoint up. I'm Mark Hawley; I'm with ENVIRO
Corporation, working on behalf of the Rubber
Manufacturers Association. And I did some
analysis of data, compilation of data, and then
analysis of data, data produced and available from
a variety of sources. And that's what I'm going
to talk about here.

Next slide, please.

MR. SPEAKER: Sorry, Mark, could you get
closer to the microphone?

DR. HAWLEY: Certainly. Is this better?

MR. SPEAKER: That's better, yes.

DR. HAWLEY: My second slide simply lays
out the contents of the presentation, that is I'll
talk about the objectives, describe the datasets,
market coverage, distribution of the RRC values,
sources of variation and then some points of
discussion.

Next slide, please. These are the
objectives of the work that ENVIRON did on the RRC
values. First objective was to compile a
comprehensive dataset. There have been a number
of sources that have distributed or made available
RRC values. We want to bring these all together
and see if the collected or combined dataset
provided us with information that was useful.

Second, following up on a suggestion by
the Transportation Research Board, we thought we should look at, make sure that we had evaluated the degree of market coverage available in the existing RRC datasets.

The TRP publication had noted that it was important to think about relative sales for individual tires when you were evaluating the variability in RRC data, in terms of how the market, as a whole, would be represented by those data.

The third point, or the third objective was to characterize the distribution of RRC values in the domestic replacement tire market. Of course, this is the state of California workshop, but we did not focus exclusively on the California market.

And then the fourth objective was to evaluate sources of variation and uncertainty associated with the RRC values that were in the combined dataset.

Next slide, please. The first of the available datasets I've listed here is the one produced for the California Energy Commission, which, of course, involved five replicates produced by the same laboratory, and I understand
on the same machine, for each of 149 passenger car
tires.

The CEC data report provided numbers in
terms of rolling resistance force. So we
calculated the RRC values from those rolling
resistance values. Other tire characteristics
were also reported.

The data that we obtained from the
literature included two datasets produced by the
Transportation Research Board, or provided by the
Transportation Research Board. This is the 2005
report, SR286.

And the data that were the basis for
that report include dataset of 34 observations,
after we've eliminated the ones that aren't
relevant to the specific passenger car tire
limitation here. Thirty four reported by ECOS in
2002 and 162 RRC values reported by RMA numbers
who submitted those data to the TRB back in 2005.

And then we, since we're working for the
Rubber Manufacturers Association, we requested
additional data from the RMA members. And we were
provided with additional sets of data by some of
the member manufacturers totaling another 662
passenger car tires.

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Combining these three datasets gives us a gross count of 1007 RRC test values with varying numbers of replicates represented by each of those test values. And varying levels and kinds of additional information on each of the tested tires.

Next slide, please. The variables we looked at in conducting this analysis included a group of variables used to identify the tires, such as the manufacturer, brand, model and so on. Two of the characteristics in this first bullet, load index and speed rating, are really measures of, or indices of the service for which the tire is designed, a service description.

And then we also included in the tire identification category the size, which is defined by three dimensions, the rim diameter, the section width, and the aspect ratio. And also a prefix. Since we're focused on passenger car tires, the prefix really comes down to P metric versus Euro metric. Light truck tires have been excluded from the dataset.

The variable that we're focused on, understanding the variation in the distribution of this, the rolling resistance, we used rolling
resistance coefficient and, of course, for the CEC dataset we computed that from the rolling resistance force.

And then the other tire characteristics for which we had data for some, but not all, of the tires, included the UTQG ratings, traction, temperature and tread wear, the tire weight, the tread depth and the outside diameter.

And we were interested not just in looking at the RRC values, themselves, but also to see how those other variables related to RRC.

Next slide, please. To combine the datasets we first looked at them critically to see whether or not there were observations that should be excluded, or, in fact, if there were errors that should be corrected. With the TRB dataset there were a few minor errors that we had to correct.

And they and some of the other data sources reported speed rating not as an individual value, such as S or T or V, but as a group. For example, S,T or H,V. They had defined speed rating groups that in some cases were the same from one dataset to another, and in others different between the datasets.
So we went and did our best to assign individual speed ratings to each of the tires in the TRB datasets. And load index values, as well.

The CEC dataset provided the actual speed rating and the load index and most of the other variables of interest to us. We did take the average of the five replicates, and the rolling resistance force, and then convert that average to a single RRC value for each of the 149 tires that were tested.

The additional datasets we received from the RMA members varied in terms of the number of replicates per tire. So we would look at RRC value for one manufacturer and see that that was an average of three replicates. And in others it was based on a single test.

Where it was possible for us to determine not just in the recent RMA member datasets, but in the others, we made sure that we knew how many replicates were represented by each of these RRC values.

We weeded out tires that were represented in the dataset, but which, I think, are not considered in the proposed regulation by excluding all LT, light truck, tires. And winter/
traction tread tires.

We included RRC values and data for original equipment tires, because almost all original equipment tires are also available as replacement tires.

As I said, the current count is 1007 RRC values with identifying information. But the extent of the additional information on variables, especially such as tire weight, outside diameter, tread depth, is variable from one RRC test value to another.

Our second objective was to see how well this dataset characterized or represented the replacement tire market. We had to try to evaluate this without having any sales data that were specific to individual tires.

And RMA members provided us -- RMA actually provided this compiled dataset that showed tire shipments, domestic tire shipments for the calendar year 2006. And we used this as the basis for estimating domestic sales.

Again, second bullet. The sales data are not available for specific tire brands, models, stock keeping units, or states. We don't have data for California only.
We used the RMA tire shipment data to estimate the percentage of the 2006 domestic passenger car replacement tire market accounted for by specific combinations of tire size and speed rating.

And these percentage estimates are based on shipments by RMA members which represent approximately 90 percent of the domestic replacement tire market. So we had some confidence that the numbers were reasonably good.

Next slide, please. In terms of market coverage what we find is that the combined 1007 observation RRC dataset includes tests on approximately 150 different sizes of tires with various speed ratings.

Many of those sizes, probably most of those sizes are produced in only one or two speed rating codes. There are many combinations of size and speed rating that are manufactured and sold.

Speed ratings, as related to tire construction characteristics, can influence the rolling resistance coefficient. And the tire characteristics that relate to the speed rating suggest four speed rating groups can be established. Those being H, -- and speed ratings,
the higher speeds are farther along in the
alphabet generally with the exception of H, just
to keep everything from being too transparent.

H, V which is faster than H, ZR which
includes W, Y and Z rated tires. And then all
others. That is the lower speed tires which have
letter designations up to T. And in some cases
not all the tires have speed ratings on them.

Size and speed rating are often related,
that is higher speed ratings are typically found
in sizes with larger rim diameters and lower
aspect ratios.

And collectively in our combined RRC
dataset we have test data, RRC test data for more
than 200 combinations of tire size and wannabe
sport SR groups that are sold in the domestic
replacement tire market.

Take all together, the tire sizes
represented in the combined RRC test dataset
account for more than 92 percent of the 2006
domestic replacement tire market as gauged by the
tire shipments by the RMA members.

The 200, more than 200, actually,
combinations of size and SR group represented in
the dataset account for almost 88 percent of the
market. So, the first bullet there is considering size alone. We've accounted for more than 92 percent. If we look at the combination of size and speed rating, we've covered about 88 percent of the market.

What's critical, though, is that none of the untested combinations, none of the combinations of size and speed rating group for which we don't have RRC data in the combined dataset account for as much as half of a percent of the market.

So, the portion of the market that's not accounted for by these 200-plus combinations is distributed over a very wide and very large number of combinations that haven't yet been tested size and SR group.

We also looked to see whether the distribution of RRC test values we had across these 200 combinations, many of which had more than were represented by more than one of RRC test value, was the distribution of RRC values in the combined datasets, similar to the proportions of sales represented by those combinations. In some cases it was, and in some cases it wasn't. It certainly wasn't a well balanced dataset.
In terms of characterizing the distribution of RRC values in the replacement tire market, which is the third objective, we took two approaches. One was simply to use the available RRC test data values. And the second was to combine, or to use the tire shipment and sales data to assign weight to those RRC test data values.

And it's actually -- like we're using those two methods to address somewhat different objectives. If you think about characterizing the market, the replacement tire market, though, the sales-weighted figures are the ones that would be closer to, I think, what you're interested in evaluating.

Each of these two approaches allows us to develop a curve that represents the distribution of RRC values in the market. And as shown on the next figure, the curves are nearly identical.

The red curve here is simply representing the unweighted RRC dataset of all the values combined, 1007 values. At the blue curve, which is very similar, is after the sales weighting has been applied to those numbers.
Next slide, please. The fourth objective was to evaluate, to examine, identify and evaluate sources of variation in RRC values. And I like to think of this in terms of starting with an individual single measurement and working up from there.

Dan's presentation talked about efforts to measure and control the repeatability of measurements by specific laboratory working on the same machine with the same tire. Once we get into a question of the replacement tire market, there are a lot more sources of variation that come into this.

Focusing initially on sources of variation within a specific stock-keeping tire, the two primary sources are item-to-item variability. Because the tires are manufactured items, they aren't all exactly the same. So there's some variability between replicates.

And then second, variability due to differences between test machines. And, of course, the ISO standard is developed and will be implemented to try to address that second source of variability.

The variability for both of these
sources should be considered in evaluating the uncertainty associated with an RRC value reported for an individual tire.

Differences in RRC values between SKUs are separate from these two categories or sources of variation I mentioned previously. We also looked in the dataset and found that the differences in RRC values between various SKUs don't appear to be very strongly related to other variables in the combined dataset, such as the size, UTQG ratings and so on and so forth, there's other variables listed here, are not very good at -- they don't provide you with a high degree of precision in predicting what the RRC value of a specific SKU will be.

In terms of the variability with an SKU, the CEC dataset provides us something that we didn't previously have, and that is a dataset that can be used to look at the item-to-item variability. We have five replicates tested in the same laboratory on the same machine for each of 149 different SKUs, or types of tire.

And what I've shown here is a plot that shows on the horizontal axis simply the average rolling resistance coefficient calculated for each
of those 149 tire lines.

At the black bars, the vertical bars around that line are simply the confidence intervals established for each of those RRC values. And what's interesting about this is that the width of the confidence interval appears to be unrelated to the RRC value. That is you don't see the confidence intervals getting larger as you go up or down on the horizontal axis.

Next slide, please. The 95 percent confidence intervals that are shown on the preceding figure were simply computed from five replicates from the same laboratory for each of the tested tires.

The half widths of the confidence interval is a function of the sample size, in this case 5. And the test-to-test variation, or what I had previously referred to as the item-to-item variation, but it really also includes the repeatability that Dan was talking about in his presentation about the ISO standards. So it's probably better to refer to it as the test-to-test variation.

The half widths computed from five replicates for these 149 tire lines range from .03
to 1.3. And the average half width is .26. So there is quite a range of variability or levels of variability from one tire to another evident in this dataset.

This item-to-item variability, I think, causes substantial uncertainty, at least in some RRC values. Some of them are obviously measured very accurately, or can be estimated very accurately, in that the error bar is plus or minus .03. Whereas others are not so accurately measured, as in the example here, 10 plus or minus 1.3.

The level of variation among the five replicates then is obviously varying substantially from one tire, or SKU, to another. And that level of variability does not appear to be strongly related to any of the other tire characteristics. It certainly doesn't appear to be strongly related to the average RRC, but it's also not strongly related or well explained by size or speed rating or any of the other variables that we have here.

In pair-wise comparisons between the tires for which we have the five replicates, many of the mean RRC values estimated from the CEC dataset would not be significantly different. I
think that's visible probably better by inspection
of the preceding slide with the graph -- could you
go back to that -- where you see large overlaps in
the error bars for two tires.

The likelihood that you would conclude
in a statistical sense that these are
significantly different in terms of their average
RRC is very small. You'd be looking for pairs of
tires where the error bars do not overlap before
you would expect to have a statistically valid
conclusion that, yes, this RRC is higher or lower
than the RRC of this other tire.

So then just to follow up on these
points. We put together a dataset by combining
data from various sources that has a lot of RRC
observations, over 1000 observations, in them.
But it includes sources of variation that we don't
expect to have to deal with once everybody starts
using the new ISO method. Particularly inter-lab
variability which we expect will be largely
compensated for and quantified.

I was not in a position to be able to
quantify any of the inter-lab variability with the
dataset that I put together by combining these
things. I had no way of knowing whether there was
a systematic difference between the values
reported by ECOS and one of my manufacturers, or
one of the other manufacturers, and so on and so
forth.

Although we thought about it, I don't
think we'll find that there is a way to go back
and correct retrospectively for that source of
variation. So we have this combined dataset that
has a source of variation that we don't expect to
have to deal with, at least to a great degree in a
nonquantitative fashion going forward. But I
don't think we'll be able to retrospectively go
back and remove or account for that variation in
the existing dataset.

MR. GUINEY: Yeah, I just wanted to make
one point. The chart with the CEC data would not
benefit from any of the alignment because that was
one machine tested at that particular laboratory.

So that's still real. Regardless of the
ISO alignment.

DR. HAWLEY: The second point for
discussion here concerns the market coverage.
Again, this is based on tire shipments by RMA
manufacturers, but the analysis suggests that the
RRC data that we combined in this larger dataset
represents a very large proportion of the total replacement tire market.

The third point with regard to the distribution of RRC values focusing, I think, on the sales-weighted, as a result of having what we believe is good market coverage in the RRC dataset, there was very little difference between the sales-weighted and the unweighted distributions.

And they are reasonably well behaved statistical distributions. They are not highly skewed; they're not bimodal; they're not complicated by a number of things that you might expect to see, or at least dread seeing when you combine data from a variety of different sources like this.

And then last, in the order of the objectives that we worked towards is the sources of variation, again. The CEC dataset provides insight into the variability you can expect for repeated testing in the same laboratory on replicates, that is different tires, different items from the same SKU, the same tire line.

And what we see there is that some tires cluster very tightly. That is, have very little
tire-to-tire variability or test-to-test variability in terms of the RRC value. And others have substantially more.

And fortunately it's not my problem then to decide how will you address that variability from one tire to another in terms of regulating the market.

But when I think of reporting RRC values, one of the things you have to deal with is well, how many significant digits, how many places to the right of the decimal are you going to report.

And I could envision coming to the conclusion that a reasonable way to report these is only to the left of the decimal place. We have a tire that rates 7, 8, 9, 10. Some tires you can report to a very much smaller interval than that.

But regardless of what number you put out there, even if you had three places to the right of the decimal place, you're still reporting an interval. Only need to -- once you recognize that you're reporting an interval, then the question to be addressed is how wide should those intervals be. And I think that's a question that has to be answered by regulators.
Any other questions, comments?

MR. TUVELL: Yes, let me -- Ray Tuvel with the Energy Commission. Let me ask a question specifically to your last point on how many places on each side of the decimal point.

I'm generally familiar with all the datasets that you reviewed, except I haven't seen the RMA data. And obviously I understand that the Energy Commission dataset, the TRB dataset and the ECOS dataset.

If you think about it for a second, on all those datasets how many places to the right side of the decimal point were reported?

DR. HAWLEY: I think typically two.

MR. TUVELL: Typically two.

DR. HAWLEY: Um-hum.

MR. TUVELL: So that's my understanding, also. That historically that's what the industry has always reported. Do you know something different than what I know in any of these datasets?

DR. HAWLEY: I wouldn't be the best person to answer that. In terms of the datasets that I saw, I remember looking at the Transportation Research Board publication, the SR-
286 publication. And they did discuss earlier datasets. But I don't recall what numbers -- excuse, significant digits for reporting those datasets. We could probably go back and look at that.

MR. TUVELL: So for the RMA datasets that were given to you, how many points to the side of the decimal point were they reported?

DR. HAWLEY: It varied from one manufacturer to another.

MR. TUVELL: Okay. And what was the variation?

DR. HAWLEY: I'd have to go back and look because the first thing I did was mask it down to two, because carrying numbers with six or eight significant digits to the right of the decimal point in my Excel spreadsheets was --

MR. TUVELL: Sure.

DR. HAWLEY: -- just an annoyance. It wasn't helpful. So I can't tell you for sure.

MR. SPEAKER: It was at least two --

DR. HAWLEY: Yes, in each case I think it was at least two.

MR. TUVELL: So at least two. I mean that's what I wanted to confirm, also, if your
observation is the same as mine. Apparently
historical practices, for whatever reasons, it's
been two, two to the right of the decimal, to the
hundredths is what I see on almost all the data.
And I just wanted to make sure that if
anybody's seen something -- or did you see any
qualifications in any of that data that said,
we're going to report to the hundredths, but you
can't do this, or it's not accurate --

DR. HAWLEY: No, I haven't seen that.
MR. TUVELL: -- or anything like that?
DR. HAWLEY: I think most people, most
engineers, at least, -- I'm an engineer, I'm not a
statistician, either, although I'm providing
statistical advice here, and I do have a minor in
statistics. I am not a statistician by trade.
I'm an engineer, an environmental engineer.

I think that in engineering, at least,
the common assumption is that you carry through
significant digits until you reach the end of your
calculations. That is, you use the numbers as you
intend to use them, and then you decide where to
round off.

Now, if, as a statistician, I was
interested in comparing the mean values
represented by the average of five replicates for two different specific tire lines I wouldn't round off at all. I'd carry more than two significant, or more than two digits to the right of the decimal place through those calculations.

MR. TUVELL: Yes, I was just trying to understand how you went from the fact that your observation of the data showed all others at least reported to the hundredths to coming up with the recommendation that no, you never report anything less than a whole number, which is what I thought I heard you say.

DR. HAWLEY: If I suggested that I would never report anything to less than a whole number I'm sorry about that. That's not the impression I meant to give.

The impression I meant to give is that for some of the tires reported in the CEC dataset the level of accuracy that's justified in reporting that RRC value, that the average of 5 is probably only good to the decimal point.

When you have 10 plus or minus 1.3 as a confidence interval for the mean value, you can be almost 95 percent certain that the actual mean value for that tire is between 9 and 11. But you
certainly can't be highly confident that it's between 9.9 and 10.1.

MR. TUVELL: I understand, but you're 10 to the plus or minus 1.3 I believe is the extreme example of some of the worst tire variations we saw. And, in fact, the vast majority -- and I have the data here, we can roll it up if you'd like to go over it -- shows that the very narrow bands in the vast majority of cases --

DR. HAWLEY: Some of them are very narrow, yes.

MR. TUVELL: Right. And that where you saw these high degree of variations there were indicators of other potential reasons why. Like in some cases we saw high variations in that tire, one of five. And you take a look and all of a sudden you say, why does this tire weigh a pound and a half more than the rest of them.

Or you look at the DOT serial code on it and you find that, gee, this one tire was made at a substantially different date, different plant location than the other four tires.

And there starts becoming some meaning to what's going on here. But there's ways to question or explain what's going on to the data
that not just simply say let's aggregate it all
and say, oh, gee, it's plus or minus 1.3 RRC
variation across all of them. That's --

DR. HAWLEY: Well, I didn't mean to
imply, if I did, that it was plus or minus 1.3 for
all of them.

MR. TUVELL: Okay. But that was the
only numerical conclusion I saw in your slides is
my problem.

DR. HAWLEY: I think that that is shown
as an example.

MR. TUVELL: Extreme example.

DR. HAWLEY: It's an extreme example,
because the extremes are what's important here, I
think. That is, I also have the .03 in that same
slide. That's the minimum, that's the smallest
half width that was observed.

And I report them both on that slide. I
think the 1.3 is the example I showed because I
thought the tire with the highest half width was
the one that was most important of knowing what's
the limit, the upper limit of variability that's
observed in this dataset.

MR. TUVELL: But, I guess --

DR. HAWLEY: The lower limit, I think,
we've already talked about in terms of Dan's ISO presentation. And I did point it out when I went through the slides.

MR. TUVELL: But I guess my point is you didn't take the next step of saying here's this one highest tire with the 1.3 variability. I wonder why. And start looking at the other data to try to investigate that and try to determine the reason why.

DR. HAWLEY: I looked at two things in that regard. First, I looked at the serial numbers. And my recollection, and it's been a little while since I did this, but my recollection is that the majority of the 149 tested tires had serial numbers that were very close to each other. It was not two or three or four much different serial numbers within a set of five for most of those.

When I looked at the combinations where there was the greatest variation among the five serial numbers, one of those had a relatively high variability, as represented by the half width. And I don't remember which one it was. It wasn't the 1.3. And the other two had relatively low variabilities, as measured by the half width. I
have that in my notes; I didn't put it in my presentation.

The next thing I looked at was to see whether or not there was an apparent relationship between the level of variability among the five replicates and any of the other tire characteristics for which I had information. The average RRC, of course, as shown on the slide. But also the tire weight, the outside diameter, the tread depth and all these other variables.

I had averaged those as I averaged the rolling resistance force before I converted to rolling resistance coefficient for each set of five.

So I didn't go back and look in the RRC dataset where all of the characteristics, individual characteristics for each of the five replicates were shown. Except for the serial numbers. The serial numbers are the only one of those variables that I looked at separately.

MR. TUVELL: I appreciate the answer. And I welcome the opportunity, by the way, to sit down with you and go over the data and share with you the observations I've had on the same data, and the reasons why you would be highly suspect.
about some of these tires. Maybe it's a quality
control issue associated with the manufacturer.

DR. HAWLEY: Okay. Well, I'll be happy
to do that.

MR. MEIER: Alan Meier. I was outside
for a moment, so you may have already heard this
question. Was there -- I wasn't clear which data
were new that haven't been publicly presented
before?

There were several datasets, one you
called the TRB, which I think that one is -- known
as the National Academy's?

DR. HAWLEY: Yes.

MR. MEIER: -- the National Academy?

DR. HAWLEY: Yes.

MR. MEIER: Okay.

DR. HAWLEY: It's the same, essentially
two datasets within there. The TRB is the way I
refer to it because I think it's their website
where you can find the data and download it now.

MR. MEIER: All right.

DR. HAWLEY: And it's actually two
datasets. One includes, in terms of passenger car
tires, excluding light truck tires and winter
tires and so on, I think it includes 162
observations, RRC values, reported by RMA member companies to the NAS when they were doing the analysis back five years ago, four years ago. And the other dataset, also distributed by TRB, and included in their analysis is the ECOS dataset, which I think started with 43 observations. And once you exclude the light trucks and so on, comes down to 34.

MR. MEIER: So, I guess my original question was is there any data that we haven't seen here before that hasn't been publicly available, in your analysis?

DR. HAWLEY: Yes. In addition to the ECOS dataset, the RMA dataset that was submitted to the TRB. And that was available from TRB. And the CEC data. We also have an additional set of measurements that I received from various RMA members. And that, as far as I know, has not been distributed publicly yet.

MR. MEIER: Would it be possible to get some separate displays of that data like you did for the CEC, because I think that would be useful to show.

DR. HAWLEY: Not right now.

MR. MEIER: Okay.
DR. HAWLEY: I don't have anything prepared that would show those observations --

MR. MEIER: All right.

DR. HAWLEY: -- separately.

MR. MEIER: And I was just curious, the data cover now, I guess, five years, span five years?

DR. HAWLEY: Maybe more, yes.

MR. MEIER: Maybe more.

DR. HAWLEY: Um-hum. I'm not sure when ECOS actually did their analyses. They first released the data, I think, in 2002. And I received some of the RMA data from the members, that hasn't yet been distributed, within the last 12 months.

MR. MEIER: Um-hum. So if there's been any improvement over time, it may --

DR. HAWLEY: We have to make some choices, yeah.

MR. MEIER: -- it may actually -- it might -- you have such a large sample you might actually be able to capture some of that, if that's the --

DR. HAWLEY: That's true. The TRB publication in 2005 concluded, based on their
comparison of the earlier datasets they had from
the '90s, and the data they received from the
manufacturers and the ECOS data, that there had
been improvements, reductions in rolling
resistance coefficient over time.

MR. MEIER: Yes, I recall.

DR. HAWLEY: And that does call into
question whether the earliest of the data included
in our combined dataset, the ECOS data, should, in
fact, be included in the combined dataset or not.

MR. MEIER: Thank you.

(Pause.)

MR. TUVELL: Tracey and I are nodding at
each other, so I think this would be a good time
for our lunch break.

So, it's roughly 12:20. I'm thinking
1:30, no later than 1:30, please. And we all can
reconvene and start our meeting again promptly at
1:30.

Thank you very much.

(Whereupon, at 12:20 p.m., the staff
workshop was adjourned, to reconvene at
1:30 p.m., this same day.)

--o0o--
MR. TUVELL: I'm sure that everybody would agree, based on the time it took us to get through the morning's matters, that we're going to need every minute we can get this afternoon to finish our pretty ambitious agenda.

What I would like to do, if you don't mind, is make a slight diversion from the agenda to present a couple slides from this morning that I tried to present and we had technical problems associated with it.

So I'm going to move over to the other mic to do that, please.

(Pause.)

MR. TUVELL: And, again, this is Ray Tuvell with the California Energy Commission. I wanted to show this slide. It's from a presentation I received over the internet. And it's a Michelin presentation from roughly 2006.

And my purpose in showing this is to go directly to the issue of inter-lab variability problem. And to understand it properly, and I think Dan did an excellent job, we need to be concerned if there's multiple labs doing testing,
can we compare the results of one lab to another
to another to another. Okay. Because there is an
error built-in variability there that we need to
deal with.

And the folks associated with ISO 28580,
I think, did an excellent job of identifying that
potential problem, deciding to take it on. Okay.
And so I tried to go back to find out some sources
of information to get a sense of, you know, what
did they identify and what sort of goals were they
after.

And this is where I found this
associated with this Michelin presentation. And
so it kind of speaks for itself.

Basically they recognize that there are
lab-to-lab variability, and in this Michelin
presentation, and I'm not going to say it's an
individual person representing this. It is what
you see it is there. And that's all I'm
representing. I can't take it back to any source
other than what you have here.

Point number two. An inter-lab
alignment procedure was performed between five
manufacturers and they obtained an accuracy of
plus or minus 2 percent.
And then point number three. They handed it off to ISO as part of the 28580 process. And it is my belief that that was what was used to direct the effort in the ISO 28580 standards to come up with the lab-to-lab alignment procedure.

And so you can say I took the leap of saying, gee, I think they were shooting for a plus or minus 2 percent accuracy in lab-to-lab alignment in ISO 28580.

And so I wanted to share with the rest of you where my perspective was coming from this morning in my questioning of Dan. Okay.

And let's see here --

MR. WISCHHUSEN: No, leave it up, please.

MR. TUVELL: Sure, yeah.

MR. WISCHHUSEN: Again, Mike Wischhusen, Michelin. The historical context here, the inter-lab alignment procedure did start within ETRTO, which is the European Tire and Rim Technical Organization.

What you're looking at there was a closed system of five labs with eight control tires.
What has come out of ISO is an open-ended system with an infinite number of labs and two control tires.

So there's more control tires will give you what their labeling accuracy, I'm not sure accuracy is precisely the right term to be using there. But that's the difference that you're seeing.

MR. TUVELL: Thank you, Mike. And then one other slide I wanted to show real quickly -- hold on here a second, I'm operating two computers.

In this morning's presentation there was a lot of discussion about the Energy Commission datasets. And you saw some condensation of that. And that's also what I have done here, bear with me. This is pretty gross stuff because it's got some of my analysis on it, too.

But the point that I wanted to get to is very straightforward. So here in the Energy Commission testing we did tests of a sample of five identical tires. So five Bridgestone, for example, insignia SE200s, and five Michelin MXV4+s. And why did we do that?

Because we wanted to understand and
identify that, in fact, we do expect to see some variability in rolling resistance in what is supposed to be otherwise identical tires. Right.

One would think, a consumer would think, wrongly, we all understand, that if they buy five insignia SE200s why would they expect to see rolling resistance to be the same.

And we know that's an unrealistic expectation. This is a manufactured product and there's going to be some level of variability. And so we would try to identify the extent of that variability.

And so in the presentation that Mark made this morning, he gave you a condensation of this. But I wanted to show you really what some of this data shows.

So, for example, here you will see across this group of five a really tight, I consider this to be a very tight grouping. In other words, the range of high to low is only .2.

This is a tight grouping, which tells me high quality control of a product.

Now, what else does it tell me? And, again, this is what it tells me. Am I right or wrong? I don't know. It's an OE product.
And my sense, in general, is that when tire manufacturers produce products for the OE marketplace, it's a very demanding marketplace. And they expect tight tolerances on their products, and they're getting it. And this is a good example of that. Okay.

Now, let me just quickly show you an example of tires that aren't as tight. Hold on here while the screen catches up with what I just did.

Okay, here's an example. I just pulled this one out of the blue, so it's a General, which is a Continental product. Okay. And over here, again, five samples. And you see the rolling resistance variation. And wait a second. What happened here? A 9.1 out of this group of five all of a sudden tells you something.

Now, I'm not exactly sure what this one is telling me, frankly, because I'd like to look at the weight of the tire to see if I see a major difference. I don't.

This one I look over at tread wear depth and I'm going, wait a second, it's tread wear's the same as -- or its tread depth is the same as this one. This tread depth is a lot higher. Why
didn't I see a higher rolling resistance here. I didn't see it. I can't make sense of it.

But I understand it to be something that will automatically draw my attention when somebody gives me this dataset. Something's up here.

And the something up for me is going to be it's the product. It's the tire. It is not the test procedure.

Because we told our testers that you start running into problems like this, you rerun these tests and you assure me this data is good. I have confidence in the data. The variability I'm seeing here is in the product. Okay.

And let me give you a couple more examples just real quickly here so you'll know what we came across. Here's a good example.

Okay, this one here, Goodyear. And again, I'm looking at this rolling resistance. I see this outlier. A 9.73. And you can see substantially different than the other four. And I look over here and go, uh-oh, wait a second here. Why is the weight of this tire almost a pound heavier than the rest. Could this possibly explain what's going on here, okay.

And so my point here is simply to
mention I don't want to draw a conclusion and say
I'm right on this, I nailed it, here's the reason

What I'm saying is when we get this data
we don't just randomly just throw it up and say,
gee, well, it varies all over. No, there's
reasons behind this. Okay.
And we suspect that if a manufacturer
kept a closer eye on some of these products they
would see it, too.
And so the potential of having high
degrees of variation in product, I think is
something that can be controlled by the
manufacturer, if there was a need for them to give
it that level of attention.

MR. WISCHHUSEN: Can I ask a question?
MR. TUVELL: Yes.
MR. WISCHHUSEN: Is that last example
you gave us OE or replacement?
MR. TUVELL: This one happens to be OE.
MR. WISCHHUSEN: Okay, thank you.
MR. TUVELL: Yeah. And so let me tell
you the other story I will tell you, that, yeah,
I've learned so many stories as I've tried to pick
up on this subject.
First of all, and I think Dan mentioned this, or somebody mentioned the presentation this morning, oh, you can, in fact, get OE tires in the replacement marketplace, yes, you can.

Now, it's very difficult for most people to be able to identify what they are. Okay. So if you go out and look at a tire how would you know that's an OE. I couldn't do it, but I have experts who can.

Unfortunately, we've been told that oftentimes the reason why OE tires end up in the replacement marketplace is because they've been rejected by the OE. So, do I know that to be the truth? No, I don't know that to be the truth.

But when I have found OE tire data it seems to be here regular that thought goes through my mind. That's, hmm, I'm wondering if that's a partial explanation here. That somehow that got rejected by the OE, ended up in the marketplace; we happened to purchase it. Don't know. Don't know.

So, I just wanted to take a couple minutes to share with you some of the specifics behind the data that you saw this morning. Tremendous amount of data that we have. A lot of
analysis you can do. Lot more potential explanations behind what's going on here.

And be happy to share this data with anybody who wants to dig into it further.

So, again, I apologize for everybody giving me the time to toss those in. They were not on our agenda. And so I'll turn now to Gene Petersen, who's our next scheduled speaker.

(Pause.)

MS. NORBERG: Tracey Norberg with the Rubber Manufacturers Association. I just wanted to take a minute to wrap up from our morning discussion and the information that Ray has provided, and say I think we all from the tire industry really appreciate the dialogue that was provided this morning on a lot of very tough technical topics.

And are planning, as we move forward, to provide additional information hopefully to answer some of the questions that have arisen here in the docket, in the comment period on this workshop. And we will be providing the complete ENVIRON report with all of the data and analyses during that comment period.

But want to have a chance during the two
weeks intervening between now and the 22nd to be
able to incorporate discussion and comments that
we've had here today.

So I just wanted to kind of close the
discussion we had this morning, and let everyone
know that that's our plan moving forward.

Okay, so sorry about that, Gene. Thank
you. Turn it over to Gene Petersen from Consumers
Union.

MR. PETERSEN: Well, good afternoon,
everybody. Yes, my name is Gene Petersen; I am
tire program leader for Consumers Union.
Consumers Union is a company, if you're not
familiar with, they publish "Consumer Reports
Magazine" and consumerreports.org, a subscription
website.

We do test many products including
tires. And that's one of the things I'm going to
be talking about today.

Back in November Ray invited me to speak
to a November workshop. And there I talked about
consumers' perspective of tires, how they buy
tires, what they feel -- by tires, so forth. So
I'm going to kind of go back and cover some of
that again.
And then I'd like to touch on how we rate tires, and talk about some of the comparisons to some of the proposed rating systems that have been proposed for rolling resistance.

Next slide. Okay.

(Pause.)

MR. PETERSEN: Well, that concludes my presentation --

(Laughter.)

MR. PETERSEN: Let me start off by saying there's various sources where we get our information from consumers. We're very interested in what they want to know about tires. And I'm going to just cover some of those sources.

First and foremost, we get letters from readers. Last year alone we got over 1250 letters. And most of them go by my desk. So that's one source.

Another source is we have a forum where we have online discussions page called "Tire Talk". And there you can write in; you can talk about tires; you can share experiences; talk about problems that you're having.

We have a lot of armchair experts, as I like to call them, who share -- do some research
on their own and share their own experiences.

Once in awhile I cut in to try to set the record straight if it looks like they're going astray.

And then we do some internal research, as well. We cover these topics. They include readership surveys, focus groups that we've done on tires, and research projects.

This is all to figure out what people are interested in. Perhaps figure out ways to make our data more useful to them.

First, letters. Letters and forums comments from "Tire Talk". They have a distinctively different tone. The letters we get, we like to call post mortem. These are generally complaints. Complaints about us in the way in which we presented the data; we didn't provide enough information. Or they can't find a tire which we tested and recommend.

More likely it's a negative, frustrated, end-of-the-line type of letter to us. They just had a problem. They don't feel like they got satisfaction, and they write to us to see if we can help out at all. And this covers anything from tire integrity, to talking about the governments not being responsive to their needs,
to, you know, tire companies just put profit above anything else, tire dealers tend to mislead people. Gee, never heard that happen. But those are the type of things we get from letters.

Now, another, the discussions are decidedly different. They're more reactive in the sense that people are willing to do some research, willing to find an answer, willing to share their problem. Hey, I got a problem with my tire with this car; anybody out there, can you help me out.

So I find that fascinating from that standpoint. And also those people tend to like cars, tend to want to buy the best products for their cars. Whereas the letters, I think at least what I get out of it is they look at cars as appliances. So, two distinctively different approaches.

Next slide, please. Readership surveys. Think of these as the Nielsen ratings of television show ratings, if you will. We do our own analysis of who reads the magazine articles. This gives us an idea of whether or not they found it valuable, whether or not they used articles to make a tire purchase.

How, you know, is it a product which we
tested that they feel that we should retest in future years.

So this slide here is interesting because this slide says buyers in the market for tires. And what this means is buyers -- that percentage of buyers that actually use the article to make a purchase.

And here the red line is average of all products shown in that monthly magazine. And then the blue line above is tires. People really relying on tire information to make a purchase.

Next slide, please. Now going to consumerreports.org, our website. This is an interesting slide. It's a nice presentation of the number of hits that we track, that when people come to our website.

If you look at this, the larger the font the more hits. Number one is generally GPS systems. It's just phenomenal. Everybody wants to know about those systems.

But historically tires comes in second. And this is not just one month, this has been every month for the last two or three years have viewed the data.

Tires, I look at that -- this is
something where people are really looking all around the web, trying to find as much information before they make a purchase. Because looking at them they can't tell how they'll perform.

Next slide. Okay, we've also done some market research, too, in order to see what people are interested in, what their buying habits are like.

We did a report about a year and a half ago, and I'm just going to cover that in summary. Where do people do research? Well, they rely on the tire dealer 50 percent of the time. Websites are used 43 percent of the time. And then can't discount mentioning friends, mechanic, advertising, magazines and even the car dealer.

Next slide. Who researches tires? Well, 62 percent of our subscribers say they do. Sixty-one percent in favor of looking for safer, high performing tires.

People who own high-end cars or spend a lot on tires do a lot of research; 58 percent of those, of luxury sports cars, 72 percent who spend more than $500.

Okay, all that said and done, though, less than half, 45 percent only did no research at
all.

Next. What websites are researched?

Well, typically manufacturer websites, 50 percent of the people surveyed went to those sites. Thirty-five percent went to retailer sites. Also 32 percent claim to coming to us. And I have to mention there's some very good sites out there through TireRack, Discount Tire and 1010 Tires, provide a lot of information and education on tires.

Next. Considerations by buyers, what did they look at when they made a tire purchase.

Now, you have to be careful with this because when we asked this question sometimes I get the feeling they're trying to tell me something that will make me happy. The view as if they know something, and they'll throw it out. That's fine.

But we've done some focus group testing and there are others aside from just asking the question, as well. They're the type of things that come up, things like durability. But when you ask about that, well, what do you mean by durability, because it's something that there's no rating for durability on a sidewall tire. Nobody has a means of defining what that might be.
But it comes down to things like run-flat resistance, road hazard resistance, perceived quality, again another thing you can't put your finger on. And so that's the sort of thing that they're looking for when they say durability.

Tread life comes up second, generally. And again, they don't say tread life, they'll say I want a longer lasting tire. And in some ways that's almost a durability aspect, as well.

Wet grip and handling. Stopping distance. Price. They are common things that are often spoken of.

We did focus group testing. We have groups of women, we had groups of men. And we asked, we went through some thorough questioning. We found out, interesting enough, women tended to do more research than men on tires. I thought that was fascinating.

Okay. We asked people who made recent tire purchases, okay, what did you get and why did you get it. After going all through this, it came down to two things. Price and availability. So, throw all the other stuff out we said, it came down to those two factors.

Next slide. Ratings, okay. Consumer
Reports, we have our own rating system that we use for everything from testing cars to toasters, what-have-you. It's one system, it's one template. We use it for everything. It's a five-point system.

And in the magazine we go from excellent to poor. Interesting enough, when we use the same system, which we do, for special publications we often talk about better to worse, which I tend to like more.

I want to talk about this system because it does have some shortcomings for tires. When you think about tires which we test, all season, S and T speed rated models and winter tires. Another subgroup would be performance summer, all season and winter tire counterparts. And then we do truck tires, all season, all terrain and winter tires.

We try to take this one rating system and apply it to all these tires. You don't end up with much resolution. I'll give you an example.

Take snow traction. If you use this template for snow traction, all winter tires are going to be probably rated five. What I'll call five is our excellent rating.
All summer UHB tires are probably going to be graded one or poor, okay. All season tires, they're going to be threes. That's it, okay. You know, we do the testing and then we report it that way. We haven't told the consumer much that they couldn't have figured out for themselves.

So what we do is we do it on a semi-global basis. We use three different spans to cover these three different categories.

The other thing I want to point out, too, that's important here is within these three categories we might use different vehicles, different sized tire. That all has a direct bearing on the ratings. Okay.

Next slide, please. Tire tests. We do all weather performance tire tests which involves 12 to 14 different ratings. We cover subjects such as dry and wet braking, hydroplane resistance, handling, winter grip, wet handling. We also do rolling resistance. We use the SAE J1269 test. We also evaluate ride comfort and noise. And we do our own tread wear testing, as well.

Now, from that, from those tests we
calculate an overall score. It's a average, a weighted average of all those different parameters. Weight with emphasis on safety-related items, such as braking and hydroplane resistance if it's an all season tire; certainly winter grip comes into play, as well.

Okay, next slide, please. Okay. We do rate rolling resistance, of course, but we say use rolling resistance as a tie breaker. We don't put a lot of weight into it because we feel it's a value feature, okay. It's not a safety feature in a tire, where our company, our mission is safety over other things. So, as such, it gets a relatively small weighting.

Why we would do that, too? Well, there's some obvious reasons. Some tires, not all, but some tires do compromise dry and wet grip and even tread life for optimum rolling resistance, okay.

But the point I want to make here is consumers, they shouldn't be selecting tires on rolling resistance, alone. There are more important things to consider, we feel.

Next slide. Okay. This is a good opportunity to show you a cross-section of our
readers and why we provide that in various ways. They want different levels of information.

I would say one type of reader is, he or she is interested in nothing more than the overall score. Don't give me all the intricate details, just tell me which is the best one to buy, okay. And that's where the overall score comes from, of course.

Secondly is maybe somebody's interested in a specific suit that meets their needs. An example of this, somebody lives like in Florida. They're not interested in snow traction, but they might put emphasis on dry and wet braking and hydroplane resistance. So they'll look at a tire that meets their needs in that area.

And then there's a group, mostly on the web, they want everything. They want all the data, hardcore data behind the scenes that make up the ratings.

Now, I have to tell you, we have done, from time to time we have provided some raw data to people. Even when we explain how to use it, put restrictions on it, put limitations on it, they still misuse it.

So it's not a good thing to do because
it tends to misinform. Even if the person you're
giving it to understands it, other people who join
into the forum section, they tend not to read all
the intricate details about it, and it's misused.

Next slide, please. As far as I know
there's not too many stores for getting
information on tire rolling resistance. We've
been doing it for a number of years now. And even
at that, I mean this is typical of our readers'
type of letters that I'll get. They're still not satisfied.

And as this one reader wrote, I'll just wrote what's in quotations here, "Your inclusion
of rolling resistance in your tire ratings is
helpful, but insufficient. You need to use
standardized testing to provide average mile per
gallon ratings." "Highlighting this critical
factor would doubtless improve competition and
innovation, as well." And, no, it wasn't Ray
Tuvell who wrote that.

Next slide, please. Okay. Now this
gets to the rolling resistance presentation
challenges, as I see them. And I'm looking at
some of the things that people have wrote in in
the past, as well, and some of the misconceptions.
First and foremost, let's talk about,
and we had talked about it this morning, rolling
resistance force and rolling resistance
coefficient. This is nice stuff, this is what you
need to find ratings. But this is not the sort of
data that at least our readers are interested in
seeing. It's just going to be too difficult for
them to understand it. Okay.

Then, again, it gets back, raw data is
always misused; they don't read the fine print
behind it, okay.

Something that I do like, you know,
which is on the basis of that last letter is
rating system that is related to gallons of fuel
or dollars saved. This is our typical reader.
They're looking to buy -- save a buck, save some
fuel. Okay. That's great. I'm all for that.

Here's the problem I have with rolling
resistance. It's a collective savings. Every
year when we do a rolling resistance test of peer,
peer-like tires, we'll take the best tire, the
tire with the least amount of rolling resistance,
and the worst tire in that program, with the most.
And then we'll run our highway fuel
economy test on a set of those tires. And I can
tell you, even when we're looking at fairly large differences in rolling resistance of 30 to 40 percent, which is huge in my mind we're only seeing gains of maybe one or two miles per gallon. Again, I think that's a lot but some people are not terribly impressed by that.

And this brings to mind what rolling resistance is. It's not something that direct individuals are going to see a huge benefit from. But as a state, as a nation, yeah, we can save a lot of fuel and a lot of energy. They have to understand that.

Next slide, please. Okay. There's been a few rating systems that have been kicked around. There's obviously more that should be considered, as well. I'm just going to talk about these two that I'm familiar with.

One is the EnergyStar system, which has been brought up. Now EnergyStar system exists today. It's used for a lot of products out there. Typically you take the top 20 or so percent within a line that are the most efficient. You give them that award. Okay.

I like it because it's simple, it's intuitive. It already has good consumer
awareness. People understand it, or at least they've seen it before. It's not something new. On the down side of that, on the lows, it does tend to drive, I believe, consumers to buy only on efficiency alone if it's got that award. Okay. Again, that's not something I think people should consider only. Getting back to other performance features, I think, are more important. Currency. I'm not sure how this is going to work, but I can share, you know, my experience in rating tires. There are always new models coming out routinely.

Let's say you have a standard of excellence up here with the top 20 percent in that category. As new tires come into this, they'll be introduced into that new excellence margin, okay. What's going to happen to tires that are on the fringe of that? Are they going to be dropping out? How are you going to manage that? You have the EnergyStar system award today, but tomorrow you may not. I think there could be some confusion there, but maybe all that can be worked out. But I just wanted to make a note of that. And then again, you got award for the top 20 percent or so, but what of all the others,
the 80 percent down below. We make no mention of
them. We tell people nothing about those tires.

So that leads me up to the star system,
five stars. I do like that in the sense that it
does define all tires. But it, too, I think, has
definite disadvantages. And, again, it gets back
to can we use one scale to identify all tires. Or
are we just going to end up with a bunch of ones,
fives, and tires in the middle? I don't know.

It does have good awareness, but you
know what, the stars, particularly the stars as
shown here, they're related to safety. NHTSA
already uses them for their testing, even for
child-seat testing. So maybe something like fuel
economy, fuel pump icons or something would be
worthwhile. I don't know.

Next slide, please. Okay. Having said
all that, this year I'm testing 72 models of
tires. And this is the first year I've seen, at
least, a couple of tires that have actual labels
on the sidewall that would indicate they had some
fuel efficiency feature to them.

So while we talk about rating, while
Europe talks about rating, even the federal
government is talking about rating some time in
the future, tire companies are already ahead of the game. They're rating tires now.

And how to explain this is this is preliminary data, I must stress. We haven't published this yet. But the rolling resistance data was just complete a couple weeks ago. And what I show here is the tire on your left has a fuel gauge and reads full. It's an all season HB rated tire.

And what I did is I show in a bar chart form, again it's peer tires, 16 other HB rated tires. And these are averages. And it has 32 percent lower rolling resistance. It was interesting to see that.

The other tire is a winter tire, and I don't know if you can note it here, but it has something specific on the sidewall, it's not even fooling around with symbols, it says ultra-low rolling resistance on the sidewall of the tire.

And I compared that to its 11 miles of tires within that category. That had only about an 8 percent difference in rolling resistance from the average of those peer models.

A couple points here. I was happy to see that they were both more fuel efficient than
norm. But it brings up something else, is that there's different levels of efficiency. And so while we tell people that they're efficient, they really don't know how efficient they are, unless we had some standard format. So that's something to consider in developing a grading system.

And then the next slide. I can't harp on this enough, and it's been said before by several people already. With any grading system we need an education program for this to succeed, okay.

Pressure, maintenance, it's got to be the top priority. People who don't maintain tire pressure, that has a direct relationship on rolling resistance. We have to tell people, particularly if they're going out to buy a fuel efficient tire, that they're not going to get it if they don't ever watch the inflation of that tire and maintain it.

And secondly, too, and I've gotten some letters on this already, particularly with Prius owner tires, talking to Dan about this later -- before, rather, reminded me that when people talk about replacing tires, it generally is they're removing a worn out tire. And they're putting on
a new full tread tire.

Even if it's touted as being a fuel efficient tire, that full tread tire may not be any more efficient than that worn out tire. Or may even be less efficient until it starts to wear.

People have to understand that. We're going to have to tell them that. We're going to have to explain all that. Otherwise I'm going to be getting more and more letters on this subject.

And then, you know, we talked of all the question marks this morning about rolling resistance, and I'm just throwing out a few things that come to mind. Load, speed, ambient temperature, rolling time, road texture, looking at the temperature of the road. And you got to look at the vehicle. The vehicle's overall efficiency and its alignment.

You know, we think of the tire. It's not a product that can stand alone. It's a component of a system. It's a component of a vehicle. So, you not only have to take care of the tire, you have to take care of the vehicle to get the most out of it.

I'll just leave you with that. Thank
you very much for allowing me to speak today.

MR. GOTTLIEB: Gene, thank you for a
great presentation. This is Adam Gottlieb with
the Energy Commission. In your professional
judgment do you have an idea of what the model
might look like? I mean aside from the
suggestions you gave. I mean is it a color code?

MR. PETERSEN: You mean a grading model?

MR. GOTTLIEB: Is it a color code, is it
a number? Is it a --

MR. PETERSEN: Ultimately what I would
like is one system universally. We're talking
about federal government, we're talking state of
California, we're looking at the European system
that may come out.

I would like to see one system only.

Because again, it's all about me. I'm going to be
going --

(Laughter.)

MR. PETERSEN: -- these letters. And if
we end up with one, two or three systems, I'm
going to be spending all my time talking about
them, making -- trying to learn the virtues, the
positives and negatives about these systems. And
bring them to light for our readers.
We already see something like this with speed ratings, and the temperature rating on a sidewall tire. They're not directly related, but they look at similar things. And you try to break that down for people and it's just, it's hard.

So, to answer your question directly, I don't have a specific proposal. But I would really like one system, whatever that would be.

MR. TUVELL: Ray Tuvell with the Energy Commission. You're not looking at actually a combination of this slide and the next slide after it, because in a way it's combined in my mind.

First of all, I think you've touched on such a critical point on this consumer education thing. And regardless of the system we come up with, I'm interested in your views of how do we introduce this out there, you know, this concept of this subject of energy efficient tire.

I mean the mechanism for doing it, and the slide before, for example, stamp it on a tire? Just about everybody I've talked to, and I pretty much agree, I don't look at a tire before I but it. You could stamp it on there, but it's kind of a waste for me. And I think it is for most people.
But it raises the question of then how do you get, whatever we come up with, what's an effective means of getting it out there to the consumers.

MR. PETERSEN: Yeah. Well, I think it is a challenge. Certainly in some ways I like it on the sidewall tire, but in lieu of point of sale, I'm really fearful of that. Because the people who are behind the counter at point of sale may not be qualified at all to answer these type of questions.

So either a label that goes on the tire, you know, a stick-on label when you buy it. Or they tend to fall off. Maybe if you put it, you see them by the time the tires are mounted on the vehicle.

Or maybe a brochure that comes with it, with the tire, to show its placement among all its peer models. And, again, I don't know what this labeling system would be like. Some of that's going to dictate this.

But within that labeling system there has to be a kind of brochure that runs through what the labeling means, and tells the people what can you expect to get out by purchasing this tire
with its energy level.

So that's going to be part of it. You can't separate the two. Got to have the education and you got to have the meaning behind the rating that you come up with. If it gets lost, it's not going to be meaningful.

MR. TUVELL: And one extension of that, UTQG. The current grading system for temperature, traction and tread wear. Do you have -- I mean, and its intention was a consumer information program. Different from ours, but the same in that idea we're supposed to use that to get information out there.

Do you have enough experience along with that to give us some lessons learned? I mean is that a good model for us to build off of or not?

MR. PETERSEN: Well, in a November workshop they talked about UTQG. I poked my finger into it a bit, to talk about the shortcomings, particularly of the temperature and the tread wear portion of that.

Let's take the temperature portion first. Most tires are generally graded A and B. Few are graded C, because they're made more robust now. The standard, minimum standard has changed.
So is it worth having that to begin with?

And secondly, we already have the speed
rated that tends to relate with temperature
performance, or temperature resistance. So I
think that could be looked at.

Tread wear, same thing. We look at
tread wear ratings, first of all, nobody
understands the index, nobody understands that
it's comparative to some reference tire out there
that's labeled a grade of 100. Okay.

The second thing is it's a unit-less
type of number. Doesn't correlate to the miles to
be driven or tread wear warranty or some value
like that. So, it's somewhat meaningless. Again,
gets back to what people want. They would like to
see information in terms of which they understand
already.

Again, we can talk about tire
efficiency. It gets all down to miles per gallon,
dollars saved, at least with our readers.

So, anyway, let me just get back to
UTQG. This is one of the reasons why we look at
tread wear. We do our own tread wear testing
because we get better resolution than what's on
the sidewall tire.
And that sidewall rating, that's a self-certification process. The manufacturer just has to meet that level. Doesn't mean that the tire is going to exceed that level, but it has to meet that level from a minimum standpoint.

So you may not see a lot of resolution. The type of numbers that reside on those tires that compete against directly one another, they all seem amazingly alike. So it might be more of a marketing thing at that point.

And it's the tread wear rating, the tread wear warranty, excuse me, because that's where manufacturers put out money, you know, essentially insuring the tire. And what we see in our tread wear test, which people can use to judge tread life.

Yes, Mike.

MR. WISCHHUSEN: Gene, thank you. This is Mike Wischhusen with Michelin. To go back to what you just said about UTQG tread wear, I want to make sure we understand clearly.

Indeed, as most other federal automotive safety regulations, self-certification is the model, which means the manufacturer assures that the tire passes whatever the test may be.
In the case of the UTQG tread wear, the flaw, or the commonly interpreted flaw in the tread wear system is not that it's self-certification, it's that the regulation is written that the grading is a minimum. The tire must perform at least this well.

Okay, so the flaw is not the self-certification, the flaw is a minimum regulatory standard.

MR. PETERSEN: You're correct, I stand corrected, thank you.

MR. MEIER: It's Alan Meier. Wonderful presentation, thank you very much. I have a question about testing. How many times of each type do you test when you're doing a rolling resistance measurements?

MR. PETERSEN: Well, you mean for a model?

MR. MEIER: Yes.

MR. PETERSEN: Okay. Three. Three per model. And what we do is we have a statistical department down there in the Yonkers office. They'll go through the data. They'll use a program to come up with statistical differences. And they'll show them within the five-point system.
which we have.

MR. MEIER: Are you comfortable with
testing three tires as representative of one SKU?

MR. PETERSEN: I think comfortable. I
mean if anything, for the statistical process, if
there is large variability, it's knocked down a
bit. Okay.

So if a tire in a grouping, the more
precise you can get these tires to fit into these
things, if there's a large variability then
there's a larger group of tires that are
statistically the same.

MR. MEIER: So do you find a large
variability? Does it seem to be consistent with
what the California Energy Commission saw with
their variation?

MR. PETERSEN: It does vary. I mean,
and it gets back to, I think, we were talking --
you were alluding to it before, in some ways, the
quality of the tire.

Now let me point out. When we do our
testing we try to buy tires that are made within
the same week of production, same plant. These
are replacement tires because that's what we test.
We don't test original equipment unless the
original equipment is a replacement model, as well.

We can see variability changes, they run the gamut. And, you know, some of that could be just things like how well they control uniformity of the tire, you know.

So, why? I don't know. That's not my job. But if there is a large variability it's going to show up in how we place the tire through the statistical analysis.

MR. MEIER: Back to the label, you got a slant on labels which I thought was useful because it shows the pros and cons on the rating systems.

Another part of this, which I think shows up in all these labels, is the extent to which -- let me not call it a label, let me call it a rating system like you did.

It's not only the consumer response, but the manufacturer response to how they will basically adjust their production to in some way coincide with the rating system.

And I wondered whether you had any comments about that, whether maybe EnergyStar or a rating system might, with the stars, the five ratings, might -- which might the manufacturers
respond to -- I'm not sure if I want to use better, but differently. Do you have any sense of --

MR. PETERSEN: I think that's something you would have to ask them here. My concern is not so much the manufacturers, as much as it is how the consumers might view this.

And so I showed these two because these are two systems that consumers are somewhat familiar with already.

But, again, this is a question that the tire makers are --

MR. MEIER: Yeah, another rating system you might have put up there is the FTC label --

MR. PETERSEN: Sure.

MR. MEIER: -- for all appliances. And then, also, of course, the automobile label, too. There are other kinds of ratings systems --

MR. PETERSEN: Yeah, but --

MR. MEIER: -- that could have --

MR. PETERSEN: -- I know these are two that we have been talking about. And I just wanted to run through these. Because I haven't seen a rating system yet that works perfectly for this.
And more to the point, you know, we were
talking this morning about data down to the
hundredth of a place, and yet keep in mind that
we're looking at large differences, huge
differences in rolling resistance that has to be
there for this to be meaningful.
So, you know, it gets back to a system
that is really going to show the consumer, yeah,
it makes a difference. If you tell me you're
going to use a five-point system, and you give it
an excellent five-point star for tire efficiency,
and I put it on my car and I don't see a
difference, that system has failed.

MR. MEIER: Yeah, in the November
workshop it was clear that from all the
presentations and discussions that the consumers
cannot be required to make a complicated decision
about energy efficiencies.

MR. PETERSEN: That's right.

MR. MEIER: They just were severely
limited in the calculation --

MR. PETERSEN: Well, let me add to that.

Who looks at it right now? The hybrid owners,
particularly the Prius owners. Okay. And anyone
else, when gasoline goes above $4 a gallon.
That's it.

You know, I think it's innovative that some tire companies came out with some special rolling resistance tires. And there's countless other -- there's a number of others that have done so in a route of showing how well their tire performs against peer tires in the literature.

That's wonderful stuff, but right now people don't care about it as much when gasoline is relatively cheap.

MR. MEIER: Thank you.

MR. GUINEY: Dan Guiney, Yokohama.

Gene, you wouldn't call the five star a categorical rating system. And do you also consider the one to five, or best, better to worst a categorical rating system?

MR. PETERSEN: I believe so, yes.

MR. GUINEY: And --

MR. SPEAKER: Could you get closer to the mic?

MR. GUINEY: I'm sorry. In case of your categorical rating system, you mentioned you do rolling resistance testing. And your statistical department, based on your categorical system, Consumer Reports has decided where these
boundaries fall between your categorical system.

MR. PETERSEN: That's right.

MR. GUINEY: Have you given your readers any relationship to what they can expect in terms of fuel economy?

MR. PETERSEN: And I thought I covered that, but that's a common question. We normally, in the past sometimes we've given the data without doing a fuel economy test.

So typically, like last year, as an example, we presented the data and we did a fuel economy test between the best and the worst. And we gave them a bracket, this is what you can expect if you bought the best tire versus the worst tire within that group.

Just to give them a sense that this is not a huge thing. This is not going to change your Expedition into a Prius, okay. But it's going to help. Okay.

And, in fact, you know, if you look at that span, one to two miles per gallon, most of the time that's from the best to the worst, most of the time you're buying a tire that's probably in the middle. So you might see something that's negligible. In fact, you won't realize any
savings unless you're a pretty good bookkeeper and look at your monthly consumption of fuel.

And this is where it gets back to, I believe, people have to understand, yes, they can help themselves out; they might save a few hundred dollars a year by going to lower rolling resistance tires.

But the big bang for the buck is if everybody goes to low rolling resistance tires, what we can save as a state and a country. You know, that's where the real savings are.

MR. GUINEY: So you've attempted to describe the lowest category delta to the highest category. Did that have anything to do with the risk of misclassifying in the intervening categories?

MR. PETERSEN: No.

MR. GUINEY: Did any of the proper categorization or dropping them in the right buckets go -- was that part of the process in the statistics?

MR. PETERSEN: Yeah, that's the statistics of it through the -- program defines the buckets for us. And like you said this morning, don't ask me too many questions about the
statistics, that's not my job. But they provide
the bins for me to utilize.

MR. GUINEY: And there was a question
this morning that maybe you can also answer. Are
the bin widths constant width that they recommend
or not?

MR. PETERSEN: I can't answer that.

That's a good question. I'm not -- it's all based
on individual statistics of the variability, of
the individual models versus -- well, of the
individual models.

MR. GUINEY: Thank you.

MR. AHUJA: This is Kamal Ahuja with the
ARB. In the letters to Consumer Report, can you
tell us what are the top few gripes people have
about tires that maybe the tire manufacturers can
consider those parameters and decide whether they
want to compromise on those issues or not?

MR. PETERSEN: Again, I mean, let me
just clarify that question. You're asking are
there other characteristics that people are
c concerned about?

MR. AHUJA: No. I'm asking is from all
the letters that Consumer Reports receives, plus
the forums that you have online, would you be able
to tell us what the biggest gripes are of consumers --

MR. PETERSEN: Oh, sure, --

MR. AHUJA: -- when it comes to tires?

And maybe the tire manufacturers may or may not consider those parameters when they --

MR. PETERSEN: I think one of the things that comes to mind is something that's relatively new, a newer trend. Particularly on newer vehicles. It's not a tire problem, per se. It's an auto manufacturer problem.

We're seeing too many tire sizes out there. And there's evolution to going to larger and larger size tires on vehicles.

So, you're looking at people are often writing, I can't find that tire; I can't buy that tire because it's not available in my size. Okay.

And this is another subject matter which I think, this is why we like the 4/32nd rule for when tires approach 4/32nds of wear versus 2/32nds. The 4/32nd gives them some time to start thinking about shopping for new tires. Because they're going to need that time to get tires ordered for their car. Okay.

And that's been a real big issue,
particularly with late model cars. And I see that
just getting worse.

When I started in the tire business some
30 years ago we had like 60 sizes, okay. We're up
to over 312 now. Okay. That's incredible. You
can't expect tire dealers to carry all those sizes
and all those models. It just can't happen.

Some sizes are only unique to specific
cars. So people are limited to what they can buy,
what's available for their car. I think that's
the key one that I'd like to leave you with.

But, maybe another issue. It's come,
from time to time, run-flat tires. And, again,
this is one of those things that people like the
concept, they like the security. Run-flat tires
work. But they don't like the cost of buying
replacements. They don't like the limited
mobility of some of the run-flat tires.

They always use the example, oh, yeah,
that's great that it's got a 50-mile range when
it's a flat -- mode condition. But what happens
if I live out in Utah. They always do this to me.
And, you know, I'm 200 miles from the nearest gas
station. Well, yeah, then you got a problem.

(Laughter.)
MR. PETERSEN: But, you know, that's another feature that it does work well. But you have to understand its capabilities and limitations. Okay.

MR. AHUJA: Thanks for your response.

MR. PETERSEN: All right.

DR. WADDELL: Walt Waddell with Exxon Mobil. One thing I want to point out, if you use the CEC rolling resistance data versus the statement that you use, you'd only buy replacement tires.

So when you replace the replacement tires you're going from OE to replacement. And then in replacement there's also a range. So that initial changeover is a considerable first-time penalty --

MR. PETERSEN: That's correct.

DR. WADDELL: -- wider than what you might actually see replacement only --

MR. PETERSEN: You might see that, yeah, right.

DR. WADDELL: Okay.

MR. PETERSEN: But I think, too, one of the things that I find interesting, I showed a slide of those two tires that had fuel efficiency
labels on them. I find it remarkable that tire companies are looking at that as a way to sell tires. That's something new that we haven't seen before.

So it'll be interesting to see how that falls out.

Okay, thank you very much.

(Pause.)

MS. NORBERG: All right. Well, thank you very much, Gene, for the great overview of a complicated marketplace.

And our next presenter is Tim Robinson from Bridgestone. I think Tim will build on a lot of the context that Gene has discussed, and then give some of our perspectives and our thoughts on how a rating system might work.

So, Tim.

MR. ROBINSON: Okay, thank you, Tracey. As Tracey mentioned, I'm Tim Robinson. I work for Bridgestone; 25 years experience, primarily in product development and testing. I'm here today representing RMA and the RMA members.

My part of the presentation is tire efficiency consumer information. And really I'm going to break it down into two parts. The first
is rolling resistance coefficient versus rolling resistance force. There's been a lot of dialogue on this over the last several hours as to which is the best basis for a rating system.

Then after that we'll look at the RMA rating system proposal.

So, next slide, please. Before we go to those proposals, what we'd like to do is just rehash a little bit some of the requirements of AB-844.

Three main components at least of the 25771. One is to develop a database of the energy efficiency of a representative sample of tires sold in the state.

The second is to develop a rating system that will enable consumers to make informed decisions when purchasing tires for their vehicles. And this is key -- we'll hit this a little bit later -- for their specific vehicle.

The third item is based upon the test procedures pursuant to A and B, and the rating system pursuant to B, develop requirements for tire manufacturers to report to the Commission energy efficiency of replacement tires sold in the state.
Next slide, please. So basically what makes a good rating system. So these are the criteria that the RMA developed, which we came up with, comprise a good rating system.

First of all, is it easy to understand.

Does it offer consumers a choice among products appropriate for their vehicle. And this becomes key later on as you'll see.

When we say appropriate we mean the tire that is applicable to the vehicle which carries the load, the proper speed rating, so on and so forth.

Does it lead consumers to suggest a tire choice that is proper to the vehicle. Can it provide information about potential fuel efficiency. In addition to this, as Gene pointed out, there's other criteria that need to be considered when purchasing tires. Namely attributes like tire safety.

So, is additional information provided, safety, durability, relating potential tire performance tradeoffs. And there are some tradeoffs associated with trying to optimize a tire for fuel efficiency, as you'll see a little bit later.
And last but not least does it foster competition among tire manufacturers to improve tire efficiency. And the answer to that is yes; we'll go through that a little bit later on.

Next, please. So, first of all, the basis for a rating system. This is where we'll get into the details of what's the best way to base the rating system. Is it rolling resistance force, or the rolling resistance coefficient.

We've designated rolling resistance coefficient as RRC, and rolling resistance force as RRF.

Next, please. Just a few more definitions. This is really a repeat of some of the information that some other folks have shown, but rolling resistance is the energy dissipated by a tire per unit of distance traveled. The rolling resistance is typically measured on a 67-inch diameter wheel. There's a radial load applied to the tire similar to the vertical load associated with the weight of the vehicle. And we measure the force required to keep that tire rolling at a constant speed, load and inflation. That would be FC.

So the rolling resistance force -- I'm
sorry, $F_x$, rolling resistance force, $F_X$, at the axle in the direction of travel required to make the tire roll under a specific load, speed and inflation pressure -- this is under stage A conditions -- is defined as rolling resistance force.

Now coefficient is that same measurement, but it's divided by the radial load. So we get an index as to how the rolling resistance force applies to the tire as indexed to the load carrying capacity of the tire.

Next slide, please. We took a look at our databases and internal databases at Bridgestone. We looked at over 10,000 pieces of data. And we've actually correlated load index, which to you folks means tire load capacity. The higher the load index, the more load the tire can carry.

On the left-hand vertical axis we have rolling resistance force in pounds. And on the right-hand vertical axis we have the rolling resistance coefficient in pounds, as well.

What you can see here is the relationship of rolling resistance force related to load versus rolling resistance coefficient
related to load.

The bottomline is rolling resistance coefficient is relatively flat and insensitive to load capacity or load index; for rolling resistance force is highly sensitive to load index. So this will play out here in the next few slides.

Next slide, please. So what we've done, that was 10,000 datapoints. We've taken three case studies, and this is actual SAE J1269 data on three specific tires.

The first one's a P205/50R16, SAE J1269 test on this data is at 35 psi. What you can see here is the rolling resistance coefficient for this particular tire, relatively flat and constant, with changes in percent load.

The rolling resistance force, however, is highly dependent and highly sensitive upon load carrying capability.

Now, what you see is when we report numbers, for example we've used the SAE J1269 standard test condition to report a rolling resistance force number of coefficient number. That was always taken at 70 percent load.

Now, this is going to come into play a
little bit later here, but say, for example, we put this tire on a vehicle which had a position load of 1000 pounds. You can see where the 1000-pound load would line up relative to the percent load, carrying capability of that tire would be about 85 percent.

Next slide, please. Sure, go ahead, Ray.


On the J1269 test that you used here, did you use multipoint? Or did you actually test this tire at three separate loads?

MR. ROBINSON: This is a multipoint regression.

MR. TUVELL: So, multipoint regression. Okay, good. I wanted to clarify that. And then also what conclusion are you drawing on the rolling resistance coefficient? Are you claiming that it, in fact, is a constant number across all loads on this tire and on the other ones? Or is, in fact, there some variability?

MR. ROBINSON: On this tire here you see
it's relatively constant. Okay. Now, that's not
the same for every tire. Now, we have some
eamples that we can show you later where it's not
exactly flat. It may be -- there may be
decreasing a little bit. But for the most part,
on the examples I'm going to show you it's
relatively flat and insensitive to load.

MR. TUVELL: The reason I bring this up
because I think that there is some confusion on
this issue. In fact, just let me mention that in
the RMA letter of March 3rd where this originally
came up, and there's some comments in there that
said something about the Energy Commission
proposal of RRF.

I mean there was very -- let me know
when you hear an Energy Commission proposal,
because I think I would have known about it. The
Energy Commission has not made a proposal on RRF
or RRC, either one. Let me clarify that.

What has happened on this issue, for
everybody's proper understanding, is some
questions have been raised about uncertainties of
RRC. Okay. We had been led to believe that RRC
was, in fact, a constant for tires. And some
NHTSA studies have suggested, no, it's not.
MR. ROBINSON: Well, let me clarify that, Ray. I think I remember what you're talking about. Riley here, and some of the folks at VTRC have indicated, and they are correct, that rolling resistance coefficient is not linear when you get into the very low load carrying capabilities of the tire.

For all practical purposes for the range for which we use tires in the U.S., between about 50 percent and 100 percent of the load capacity of the tire, it is linear.

MR. TUVELL: Okay. And see, that's what we're trying to get some grasp of. Because we haven't seen this data before.

MR. ROBINSON: Right.

MR. TUVELL: As far as -- I mean there's not a lot of J1269 multipoint data out in the public domain. And there's not a lot of people using linear regression to figure out RRC at different levels.

And so up to this point it had been presented to us as a constant, you can count on it. And then till people started looking at it a little closer, and said, well, it's not a constant.
Now, so what happens is it raises the question of well, then if it's variable, how variable is it. Is it nearly constant, or does it vary up to 10 percent over the 50 to 100 percent load --

MR. ROBINSON: No, it's nearly constant, within the load capacity of the tire from 50 to 100 percent.

MR. TUVELL: Yeah, and so that's one of the points I really wanted to stress here. I think there's been a lot of misunderstanding of what is the disagreement, or what's the issue here. And it is we haven't seen enough RRC data over separate loads to have this level of comfort. And that it's simply been assumed in the past that it's a constant, it's a constant, and people started raising the question.

MR. ROBINSON: Good point. No, the data that Riley here, and some of the folks at VTRC presented, it shows nonlinearity, but that's due to the fact that they were in the load range of the tire, the percent load capacity of the tire was much lower than what would be used in practical applications.

Okay, so this is one tire. This is a
205/50R16.

Let's go to the next slide. Now this is an up-size tire. This tire is bigger, obviously. It's a 215/60R16; same scenario where the rolling resistance coefficient is constant, then the practical application of the usage of the tire, the rolling resistance force is sensitive to, highly sensitive to load.

But what you see here, these are the conditions in orange that would be reported for the standard SAE J1269 reporting format. But, if we take the same tire and apply it to the same vehicle that we had the previous tire applied to, which has a 1000-pound axle load, the position we're putting it on, you can see now that the blue line is much lower on the percent load capacity that the tire would carry.

So let's go to the next slide, please. Third example, and this is a 225/60R16, a bigger tire yet. So we have small, medium and large. Same scenario, but you can see now the additional shift of the 1000-pound load on this tire, relative to its percent load carrying capability.

So, we go to the next slide, I think this will help illustrate the point we're trying
Now, what we have on this slide here, this is case study one. This is taking those same three tires we looked at previously. And based upon these load indices this is 86, 94, 97, which is typically outside the practical range that you would see for a given vehicle, which we'll get into in a second.

This is now applied rolling resistance force in pounds versus percent load. Now, the SAE J1269, if you look at the rolling resistance force based proposal, all those numbers would be reported at the 70 percent load condition.

And these are the numbers that you would get if we would label those tires based upon using that rolling resistance force proposal. You'd see a 9.93 for the smallest tire, and a 13.06 for the largest tire.

So that would lead you to believe that the smallest tire would be the most energy efficient.

However, if you take these same tires and apply them all to the same vehicle, they all see the same radial load, same Fz load, if you take that and then you apply that 1000-pound load,
and you look at where that falls at on the curves, on the percent load for each of these specific tires, the rolling resistance force level you get is in reverse of what you would see if you used rolling resistance force.

So rolling resistance coefficient for a given vehicle, which is mandated in AB-844, using rolling resistance coefficient, I'll get to in a second, but rolling resistance force at 1000-pound vehicle load can be misleading and actually a reversal, if you use the rolling resistance force J1269 as an indicator.

Now, however, if you look at the RMA proposal, which is looking at the SAE J1269 rolling resistance coefficient, at 70 percent load you can see the rank order here, the kilogram/tons lines up almost exactly with what the vehicle owner would see on their specific vehicle.

So, using the rolling resistance force based proposal can lead to misleading applications of tires to the vehicle and the end user would not see the expected results. However, using the RMA proposal of rolling resistance coefficient you would get the exact rank order is what the consumer would see on their vehicle.
MR. POPIO: Hey, Tim, excuse me. Jim Popio, Smithers Scientific.

MR. ROBINSON: Yeah, Jim.

MR. POPIO: On that, is that because you're doing 70 percent of the load, you're not calculating your regression at the same load, correct?

In this example you're running 70 percent of the match load of the tire, right?

MR. ROBINSON: That's correct.

MR. POPIO: Okay. What would happen if you ran -- if you put the same load in for each of the tires, like 500 pounds or something? How would the rolling resistance force rank?

MR. ROBINSON: That's what we did on the second, in the second column, the one that's highlighted in blue.

MR. POPIO: Okay, so you picked the regression, you put 1000 pounds in. Is that what that is?

MR. ROBINSON: Yes.

MR. POPIO: Okay. All right, thanks.

MR. ROBINSON: Okay.

MR. TUVELL: Ray Tuvell with the Energy Commission. I wanted to get back to a conclusion
that you reached, to see if you and I have a
proper understanding about the application of that
conclusion.

Your conclusion about saying that RRC is
the proper unit for comparing these tires and RRF
isn't is contingent on the fact that these are
separate load index tires, correct? In other
words, if we were comparing all tires on the same
load index --

MR. ROBINSON: Right.

MR. TUVELL: -- then it wouldn't matter,
right?

MR. ROBINSON: That's correct.

MR. TUVELL: RRF and RR -- okay. And so
I just wanted to make sure we have that
understanding, because you seem to imply that one
is right and one is wrong. That's not --

MR. ROBINSON: If you're comparing the
exact --

MR. TUVELL: -- all the cases.

MR. ROBINSON: -- same load index, Ray,
then they're the same thing. Rolling resistance
force and rolling resistance coefficient are the
same thing. So.

MR. TUVELL: Good, good. And then so
let me go to the other point then, because -- and
I don't know the answer to this, and I hope
somebody will help us.

I think this is an interesting analysis
from the perspective of the consumer that would go
out into the marketplace and say, I'm interested
in any number of different sizes of tires as long
as they fit my wheel.

MR. ROBINSON: Yep.

MR. TUVELL: Do you have a sense of how
many percent of consumers fit in that category
versus consumers that are essentially saying I
only want the same size tire I got now. I mean,
that's it, give me that tire.

MR. ROBINSON: I'd have to probably
defer to, I don't know, maybe Dan or Gene. I know
there are --

MR. PETERSEN: May I make a statement on
that?

MR. ROBINSON: Sure.

MR. PETERSEN: We recommend consumers
stay with -- we recommend that consumers stay with
the same size tire that came on the vehicle.

Follow the placard that's on the side of the
vehicle in the door jamb area.
We don't tell them to deviate from that. I mean you could go up. Certainly you can't go down and have an overloaded situation. But still, we don't recommend that they vary off of that.

MR. ROBINSON: But there is a significant number of folks who do want to up-size. And they do want to go with a bigger tire. So, I don't know, Dan, if you want to address that or not.

MR. TUVELL: Go ahead, Dan.

MR. GUINEY: Yeah, I do believe, and I have heard people state, I don't have the data, that a large, a fairly large percentage of people go with exactly what the placard specification was.

And it is true that people plus-size. But the problem that comes in with plus-sizing is that load index has to be checked. In a lot of calls to our call center -- I also have the call centers that report to me at Yokohama -- we get questions about well, my 94 in place of my 97 in an up-size situation still handles the load of the vehicle, even though the 08 manufacturer placard says something else.

And that's the one that we -- when we
talk about inappropriate selection, that is a
classic inappropriate selection for us, and we
have to deal with it.

MR. TUVELL: Of course, the reason --
let me clarify the reason I'm bringing thus up. I
didn't bring it up for the sake of disagreeing
with you.

I wanted to bring it up in the context
of what's going through our minds. If the vast
majority of consumers in the tire marketplace are
looking for essentially the same size tire they
have right now, okay, then I think we just agreed
that well, RRC, RRF, either one will work for
that. They'll get the same rank order of tires.

MR. ROBINSON: That's correct.

MR. TUVELL: Okay. And so the
circumstance where RRC seems to have a specific
application that RRF would be misleading is
exactly the one you gave here. I certainly agree.

In other words, you start comparing
different load index tires.

MR. ROBINSON: Right.

MR. TUVELL: Okay. And so I just wanted
to share that observation from this content. We
see that and we understand that. Okay. We
understand that.

And so I don't want there to be any misunderstanding in our mind about that, okay. Or your minds about that.

MR. ROBINSON: Well, as you'll see a little bit later, Ray, there are some other reasonings for going with rolling resistance coefficient. But we'll get to those in a second, so.

Okay, so this is a hypothetical situation. Now we wanted to bring it down to a more practical basis.

Can we go to the next slide, please.

Now, this does happen in the industry, and we picked three case studies looking at a Toyota Corolla, a Chevy Malibu, and then a C-1500 4x2, I believe.

And these are base and option size tires on the 2007 Toyota Corolla. The exact same situation occurs. Now, this is a possibility, and, in fact, I'm sure there's been cases where people have asked to up-size, going from the 185/65R15 up to the option size, 196/65R15, because obviously if it was a base and option size tire they'd both fit on the vehicle.
Of course, we would never advocate going from the bigger tire to the smaller tire because it will not carry the load. So that's a safety issue.

But, again, in this case, looking at rolling resistance force based system, the smaller tire would indicate 7.43, the larger tire 7.97. But applying these at the same vehicle load, you get the reversal. In actuality you'll get the benefit by putting the bigger tire on the vehicle when it comes to rolling resistance force.

Now, we looked at this one at both 35 and 30 psi and the relationship holds true. And analogous to the first case study, the RMA proposal using rolling resistance coefficient lines up exactly and gives you the exact rank order as if you would apply these tires to the same vehicle.

Okay, next slide, please. Back one. The same thing, we did the same thing with the Malibu. The exact same situation holds true. I'll not go into this in a lot of detail. Again, rank order for the RMA proposal using rolling resistance coefficient. If you would upsize on this particular vehicle, this is the base and
option size, so an entirely believable and practical situation of upsizing on a Malibu, rank order using RRC is better than using rolling resistance force in this scenario.

One more, please. The last is the Chevy Suburban. Not going to get into this in a lot of detail. But there are some folks who buy Suburbans with P-metric tires and want to upsize to an LT-metric size tire. And they can do that. And then again you'll get the exact same relationship using the RMA-proposed rolling resistance coefficient as an indicator, as opposed to the SAE J1269 rolling resistance force as an indicator.

Next slide, please. So, I've tried to summarize all of this. And all this does is just take the rolling resistance force based proposal and compare that to the same tires applied on the same vehicle, whether it be the Corolla, Malibu or Suburban.

And really this just summarizes it comes to the same conclusion that the RMA proposal of using rolling resistance coefficient for swapping out sizes or going with a base versus an option size is a better indicator rank order predictor.
than rolling resistance force for fuel efficiency for consumers.

Okay, next slide, please. So in summary, as far as rolling resistance coefficient versus rolling resistance force. The RMA recommends using rolling resistance coefficient as the basis for a fuel efficiency rating system. It's more accurate than rolling resistance force in providing the consumer with fuel efficiency information, and direction of choice for their vehicle, we're looking at different tire sizes.

It offers consumers a choice among products appropriate for their vehicle. It also lends consumers to select the tire choice that is appropriate from a fuel efficiency standpoint. And also, as I mentioned before, we always go from the lower to a higher load index to make sure that the tire will carry the load.

Last point. The recommended ISO 28580 test procedure for fuel efficiency rating is based upon rolling resistance coefficient also. So the lab alignment is based upon rolling resistance coefficient. And the data quality requirements for repeatability among machines for a candidate lab versus a reference lab is all based upon
rolling resistance coefficient.

Those are all points and positives leaning towards rolling resistance coefficient as opposed to rolling resistance force.

Okay.

MR. TONACHEL: This is Luke Tonachel from NRDC. A quick clarification. When a consumer uses a different tire in the examples that you provided, are there any other changes to the vehicle that have to be made in order to do those tire choices that you used as examples?

MR. ROBINSON: Well, the only minor issue would be wheels. And we looked at the wheel weight of a base tire versus an option tire. They're within a couple pounds, which has no real significant impact upon the results. So, other than that, no.

MR. TUVELL: Ray Tuvell with the Energy Commission. Tim, on your last point there, I just want to clarify one thing.

So, in the ISO 28580 test protocol, as you well know, the first number that's calculated is the output of that test protocol is RRF, agreed?

MR. ROBINSON: That's correct. Yes.
MR. TUVELL: Okay, so I mean ISO 28580 doesn't dictate the need to have an RRC rating system. You're going to have RRF and RRC both, if you want it. It doesn't really matter.

MR. ROBINSON: You have -- you're right, Ray, you have to measure RRF to calculate RRC.

MR. TUVELL: Okay, I just wanted to make sure that there's no absolute must relationship between 28580 and RRC.

MR. ROBINSON: Well, it's just that the basis for lab alignment is based upon rolling resistance coefficient.

MR. TUVELL: Oh, yeah, no, I know that. But I think you and I are agreeing that you first got an RRF number, and then you simply divided it by load to get RRC. It's a simple mathematical thing; it's not a process problem or use of units or anything like that.

MR. ROBINSON: That's the definition, correct.

MR. TUVELL: Great. Thanks, Tim.

MR. GUINEY: The one thing in ISO 280--

whatever,

MR. ROBINSON: 28580.

MR. GUINEY: -- 28580, that is specific
to rolling resistance coefficient was the
repeatability number. Because if you don't use a
coefficient then we don't have to publish a number
of different scenarios under which force
repeatability would have.

Because if you don't use an index then
you're in big trouble when you're trying to
specify the repeatability requirements of a
machine.

MR. LAMBILLOTTE: Bruce Lambillotte with
Smithers Scientific.

MR. ROBINSON: Yeah, Bruce.

MR. LAMBILLOTTE: Tim, I'm looking at
some data that we had generated where we were
working with tires from the same manufacturer, and
they're actually from the same design. And to a
large extent, it's supporting what you're saying.

It's showing that as weight goes up
there's a correlation when you look at this whole
range of sizes, when you see as weight goes up
we're seeing higher and higher rolling forces, but
we're seeing lower and lower rolling resistance
coefficients.

When you look at these tires that are
heavy, that have high rolling forces, but low
rolling coefficients, is any actual fuel economy
getting done to support the fact that they're
better for fuel economy?

I'm not talking rolling resistance
testing, I'm talking actual fuel economy testing.

MR. ROBINSON: Well, I'm not sure what
you're comparing. It sounds like apples to
oranges because you got tires that have a higher
weight and a higher inherent rolling resistance
coefficient. And you're looking at the slope of
that curve versus something that's a little bit
different that has a lower weight. So, like I
said, --

MR. LAMBILLOTTE: Oh, I'm not confusing
it at all. I'm looking at two charts that have
inverse correlations that have pretty good
relationships. These are all tires from the same
manufacturer; these are tires of the same design.
Where I'm looking at increasing weight has a
pretty high correlation to higher rolling forces,
but higher weight is inversely related to the
rolling resistance coefficient.

And I'm not arguing that this is bad for
rolling resistance, what I'm really asking is have
these kind of relationships really been looked at
from an actual fuel economy testing. Because we haven't done that and maybe you have.

MR. WISCHHUSEN: Bruce, this is Mike Wischhusen, Michelin. Just to clarify your question, you're looking at different sizes within a tire line?

MR. LAMBILLOTTE: That's correct, --

MR. WISCHHUSEN: Okay, so --

MR. LAMBILLOTTE: -- different load --

MR. WISCHHUSEN: Right, so the only valid fuel economy comparison would be between different tires that fit the same vehicle. And in that case, that's precisely the case Tim has gone through. The larger tire with the larger load capacity will operate at a lower percentage of its total load, and therefore have a lower rolling force which would give better fuel economy.

So, you can't compare -- you can't ask the fuel economy question between two tires that will not fit on the same vehicle.

MR. LAMBILLOTTE: I agree with you. But if you start looking within tires that fit on the same wheel and can be mounted on the same vehicle, we also have had some reversals in direction, and increasing rolling forces, but reduced rolling
resistance coefficients.

That's where my interest lies.

MR. ROBINSON: Well, I don't know if we've answered your question, Bruce. But maybe we can have an offline dialogue on that one.

MR. LAMBILLOTTE: That would be good.

MR. ROBINSON: Okay, next slide, please.

Okay, so now we're moving from rolling resistance force versus rolling resistance coefficient into a rating system.

So the RMA proposal for a rating system, first of all, we're looking at the NHTSA StarsOnCars program. Everybody, for the most part, is familiar with that. And it rates aspects of vehicles in the five star rating system.

Current applications are a crash test, rollover ratings; it's also used for new car seating regulation.

Consumers are aware of this. They're starting to become familiar with it, and have some knowledge of the five star approach.

RMA believes developing a five star tire efficiency rating system would benefit consumers by providing information consistent with other consumer information.
I'm not so sure that we're locked into a star rating system. But I think we're locked in, or at least our proposal is a bin type system, whether we call it stars or whether we call it letter grades, or fuel pmps or whatever. I think we're open to that.

Okay, so now we get into the basis of the RMA proposal. Our five star rolling resistance coefficient rating system. This is what we have lined up. And so a lot of questions are going to be answered in the next few slides, so just hold on for a second here.

But our proposals, we have a five star rating system. One star would be anything greater than 12 kilogram/tons. The bin widths are 1.5 kilogram/tons. So a two star would be anything between 10.5 and 12 kilogram/tons.

And going down to the five star, at least -- up to the five star level, which would be the lowest rolling resistance coefficient, would be 7.5 kilogram/tons or lower.

Next slide, please. And this is how we come up with all of this. As Mark mentioned when he presented all of his data, this represents, this curve, about 88 percent of the domestic
market. And it's over 1000 datapoints. For all of the tires that were combined, I think 1007 datapoints from the combined California database as well as the RMA database. But you see, based upon the distribution, we have a fairly evenly distributed between five star, four, three, two and one. Of course, the middle, three star system, would represent about 46 percent of the current distribution. The chart you see on here is a sales-weighted rolling resistance coefficient of the percent of the current market as we've defined it, which would fall into our proposed rating system. One percent of the current tires would be five star down to about 7 percent of the current tires would be one star.

Next, please. So Consumers Choice had a proposed rolling resistance rating system. This is really a rehash of what Mark presented. But for the most part, the database that we collected we feel is a good representation of what exists in the current marketplace. And accounts for about 88 percent of the domestic replacement tire market. The other bullet points here you've
already seen before, so we'll skip to the next slide, please.

Digging into this information in a little bit more detail. We took this 1007 datapoints and said, okay, from a consumer's standpoint, let's take a look at it and see what would be available based upon speed rating.

One of our criteria is you replace a tire with an equal-to or higher load index, make sure the tire carries the load. And also you make sure you have the proper speed rating on the tire.

So what we have here is all the combined data. And on the horizontal axis we have whether it's a one, two, three, four or five star system based upon our data.

Also indexed on the vertical system, we have speed rating. And as you can see, the one star through two, three, four star rating systems include all of the available speed indices.

However, when you get to five star, the nature of the tires, we don't have any five star rated W, Y or Z rated tires.

Next, please. Now taking a subset of that data and looking at a specific size, the 195/65R15, we have 102 datasets. A similar type
scenario. You can see we have a pretty good
distribution between one and four stars. We have
no choices, though, in the five star rating
category. But for the most part, if a consumer
would come in and wanted to buy a 195/65R15, he
would have a choice between one and four stars for
any speed rating. That's pretty much applicable
for that size tire.

MR. TUVELL: Tim, Ray Tuvell from the
Energy Commission. Let me just clarify again how
you got here. It appears to me that what you did
is you created a five star system based on RRC
where you rated all passenger tires against each
other, is that correct? Regardless of size. I
mean that's the concept.

All passenger tires on the market
regardless of size are rated on the five star
system based on RRC.

MR. ROBINSON: On a previous slide,
correct.

MR. TUVELL: Okay. So, and the net
effect of that is, in this case here on this
slide, you have no tires that are in the five star
system, with five stars for the 195/65-15s.

MR. ROBINSON: Within our dataset.
MR. TUVELL: Correct. Okay, so let's say, for the sake of argument, that this, in fact, is all tires that are this size. There are none in the five star.

MR. ROBINSON: Correct.

MR. TUVELL: What message does that say to consumers?

MR. ROBINSON: It tells them they have a choice between one and four stars.

MR. TUVELL: Okay, right. But why -- okay, so I'm a consumer. I want the lowest rolling resistance tire. Why don't I have a five star tire in the 195/65-15 that fits my vehicle?

MR. ROBINSON: Well, that's when it gets down to market conditions and market pressure. You can be assured that once individual tire companies understand that there's a demand out there, people start to complain and say, hey, we have an opportunity to sell a 195/65R15 tire if we had a five star rating tire, you can be assured they're going to start to develop one.

MR. TUVELL: Okay. Now here's where I'm going with that. Doesn't this then become a shortcoming of the system where you rate all tires against each other, versus let's say you took all
195/65-15s and just rated them against 195/65-15s?

MR. ROBINSON: Well, that's what we're doing.

MR. TUVELL: No, no, I mean your system, in the very beginning, I looked at this from a size-specific basis. And I divided those sizes, you know, all 195/65-15s in the market, and I divided them into five categories, so that, in fact, there would be a five star -- there would be a group of five star 195/65-15s.

So the consumer then can go out and say, oh, yes, here are the lowest rolling resistance 195/65-15s in the marketplace because they're a five star.

MR. ROBINSON: Well, you could do that, but you'd have to slide the scale based upon the representative market.

MR. TUVELL: No, I mean you wouldn't have to do it that way. I'm just saying why not just rate tires based on their size. In other words, take all the same size tire and base the rating efficiency or energy efficiency on the size, itself, for each size.

MR. ROBINSON: Well, then you get into the fact you won't have the opportunity to compare.
size to size.

MR. TUVELL: Okay, but we agree that that's a small portion of the marketplace.

MR. ROBINSON: But it's still a -- I don't know if it's small. It's a significant portion of the marketplace.

MR. TUVELL: Okay, but so here's what I'm getting to. If that becomes the driving factor, that gee, we have to come up with a methodology by which consumers can compare different sized tires, then do you end up living with a system where there is no five star tire in certain categories, versus wait, maybe let's not focus so much on the need to compare all size tires against -- or all, you know, for a consumer to compare different sized tires against each other.

And give them a system where they go out looking for a five star tire and they can find it, in their size. And they'll find it every time.

MR. ROBINSON: Mike, do you want to comment on this?

MR. WISCHHUSEN: This is Mike Wischhusen, Michelin. A couple points. Somebody made the comment earlier today, I think there are
in excess of 300 active tire sizes. So, you know,
first you're looking at 300 different rating
systems.

And now to try to take care of my
friend, Gene, try and explain that -- there's a
balance. I mean there's a natural balance between
complexity and effectiveness.

Tire size is a way you can do this.
Then you've got 300 plus different rating systems.
You could do it on a range of max load capacity,
okay. And that begins to address what Tim is
talking about where you may be looking at some
size flexibility.

You could look at it on the basis of
outside diameter of the tire. You could have
different classes of outside diameter of the tire.
Because the outside diameter of the tire is a very
close approximation of load capacity of the tire.

So there are many ways to do it, but
it's a balance of complexity versus effectiveness,
ability to convey the information to the consumer.

And I'm with Tim, and actually I'm going
to address this point in my presentation later,
having an empty bucket at the top of the scale is
the best incentive you're going to get
manufacturers to change what's offered in the marketplace.

You know, but, hey, I'll save millions of dollars in development costs, and we'll set up the bucket system so that I already populate that top bucket, and I don't have to improve anything.

MR. ROBINSON: There's no incentive.

MR. WISCHHUSEN: Yeah, exactly.

MR. TUVELL: I appreciate the points, and you make it sound so black and white. It's, gee, it's that or that, and that's all. When, in fact, there's many variations in between, Mike. And I wish that you would open your mind to say, wait, there are different variations, doesn't have to be simply one way or the other.

And that's what we're trying to get out here, is the opportunity for people to consider and explore and understand that there are various ways of doing this that could possibly achieve all of these objectives, including the one.

And believe me, I will tell you, that one of my key objectives in any system I come up with is something that's going to create competition among the manufacturers.

It will happen. It will happen. But
there's various ways to get that to happen.

MR. ROBINSON: Well, let's proceed here. We have some additional information which may, I think, clarify and add some credence to what the consumer actually could use, which is miles per gallon -- actual gallons of gas saved.

DR. WADDELL: Walt Waddell, I have a question based on your proposed five star rating system. Looks to me like your system is actually even more liberal than the European system because your max RRC at 7.5 encompass two of their bands or classes, is that correct?

MR. ROBINSON: Possibly, yeah. Well, the European system bands, some of those are hypothetical, which cannot be filled yet. Those are for future expansion.

DR. WADDELL: But we just saw that with the 195 tire.

MR. ROBINSON: Right.

(Parties speaking simultaneously.)

DR. WADDELL: No, no, I understand that. There's no band D --

MR. TUVELL: Come to the mic if you need to talk.

DR. WADDELL: But what happens is I'm
saying the European system has a 6.5 class A, and then a 6.6 to 7.7 class B. You're throwing all the A and Bs and giving them five stars. You could have given the 6.5s the five stars, and then greater than 12, no stars.

MR. ROBINSON: Can you scroll back to our -- go to the previous slide, please. The one that shows the Bell-shaped curve. There we go.

Okay.

What's your point, Walter? You're saying we could have slid this down or slid it up?

DR. WADDELL: Well, if you're wanting a universal type system, Europe's got six categories. I understand one of them --

MR. ROBINSON: I'm not hearing --

DR. WADDELL: -- is not filled.

MR. ROBINSON: Are we hearing we want a universal type system?

DR. WADDELL: No. I'm just questioning what it is we're proposing. We're proposing here to combine Europe A and B into five stars. Yes?

MR. ROBINSON: Sorry, we're what?

DR. WADDELL: The proposal here is this 1 percent in the five star --

MR. ROBINSON: Correct.
DR. WADDELL: -- is European bands A and B combined.

MR. ROBINSON: That's possible. I'd have to take a look at it, but, yeah, sounds like it.

DR. WADDELL: Okay, thank you.

MR. ROBINSON: Okay. This one. Great.

A lot of good dialogue.

The next item is again, taking a subset of 1007 datapoints, the 265/70R17, 65 tests in this case. And for the most part a pretty good choice for all those different type tires.

Now, the one star rated system you don't have some H speed rated tires in there, but, again, this would open it up to competition, could potentially, if there was a demand in the marketplace, fill that category.

Next slide, please. So the question, how do we provide additional information related to safety and durability so the consumer will understand the potential tradeoffs when it comes to a fuel efficiency rating system.

We're not just trying to sell a tire based upon fuel efficiency. We also have to consider safety. So consumer information:
components, tire efficiency, rolling resistance, also safety, which we are going to advocate using wet traction from UTQG, and durability tread wear from UTQG.

Next slide, please. Can you slide that over a little bit? Looks like we're truncated some of it.

(Pause.)

MR. ROBINSON: That's okay, we can go back -- I think what I need is on there. Okay, this is a trend analysis we did on all the datapoints that we collected, the 1007 datapoints, comparing looking at the RMA five star rated system and looking at the number of stars within a given speed category. And also looking at four of those star ratings, the comparable tread wear range and the UTQG traction range.

So you can see the trends are, as you go up in speed rating your choices in average fuel efficiency ratings, from a star rating based system, decrease. Also your tread wear ratings typically decrease, as well. But your traction ratings increase.

So hypothetically let's just take a look at an H rated tire. I can say, okay, I want a
five star rated tire for fuel efficiency. But based upon what we see now in the marketplace that would require an A traction grade. So you would not be able to get a AA traction grade five star rated tire. So this is going to provoke competition within the marketplace.

Next. So integrating safety and durability consumer information we'd like to use traction as a surrogate for safety and tread wear as a surrogate for durability. And use UTQG in combination with fuel efficiency information at point of sale.

Next, please. This is an RMA concept. It's one method that could be used. You convey all this information so that the consumer can make an informed choice. Hypothetical tire, but tire fuel efficiency rating, stars, one, two, three, four, five. This could be letter grades, could be fuel pumps, whatever.

But it shows the relationship of the fuel efficiency rating system in combination with the UTQG traction grade, in combination with the UTQG tread wear grade. All the information would be available so the consumer could make an informed choice, looking at both safety,
durability and fuel efficiency.

Next, please. So, how do we tie all
this in to the consumer so that they can
understand, okay, I got a four star versus a three
star. What's that really mean to me in the
marketplace.

What we could do, this is an RMA concept
on how to communicate potential fuel savings to
consumers. You could give them point-of-sale
information stating that, and of course this has
to be worked out to make sure that it's accurate.
We're fairly sure that it looks pretty good, but
we need to confirm that.

But going from a one star to a two star
system, got a new tire, it's a one star, and a new
tire that's a two star. What does that really
mean to me for my specific vehicle for estimated
annual fuel savings.

Well, if we look at the hybrid going
from a one star to a two star, that saves me about
six gallons of gasoline per year. This is a way
to tie it into the star rating system and to
convey to consumers how much fuel savings they'll
have per year.

Next, please. So will consumer
information stimulate manufacturer competition and
innovation. And our answer is yes. The federal
UTQG program illustrates how the availability of
consumer information stimulates competition and
product improvement.

Mike will mention in a minute here that
UTQG traction grade, we used to have A, B, C. But
through the progression of technology and the
improvement of tires over time, all the tires
started to cluster around an A traction grade.

So then we expanded that to have a AA. So
that's how technology works, and how competition
forces improvement.

Next, please.

MR. TONACHEL: Sorry to interrupt. Luke
Tonachel from NRDC. Back in your table you give
the example of going from a one star to a -- I
guess one to a two star, and the gallons saved.
Is it all additive? If I went from a two to a
five?

MR. ROBINSON: Yes, yes, it's additive.

Of course, those details all have to be confirmed
to get exact numbers. But this is, in concept
they would be additive.

Okay, so summary. Rolling resistance
coefficient should be used as a rating system basis as opposed to rolling resistance force.

We feel it provides consumers with accurate fuel efficiency information and direction for their vehicle, particularly when it comes to upsizing or changing tire sizes.

The ISO 28580 procedure is based upon rolling resistance coefficient for lab alignment; and as Dan mentioned, data quality requirements.

The ISO 28580 procedure should be used as a test basis to rate tires for fuel efficiency primarily because it includes provisions for lab alignment -- be reporting numbers that are aligned numbers where you can compare lab A to lab B for the same tire.

A five star rating system is recommended with 1.5 kilogram/ton bin widths as supported by the ISO 28580 task group alignment uncertainty values based upon measurement resolution of the best worldwide labs.

Now, this is based upon uncertainty. As Dan mentioned already, the risk associated as you approach the bin limits.

We also recommend using UTQG and tire fuel efficiency rating together as consumer
information at point of sale. We can't forget the safety aspects of consumer information.

And then last but not least, the star rating system could be linked to information providing consumers with average expected fuel savings per year.

Next slide, please. And that's all I have. So, question?

MR. TUVELL: Thank you very much, Tim. Ray Tuvell with the Energy Commission. First off I would like to mention one thing. I have a copy of the Bridgestone real questions/real answers, tires and truck, fuel economy, a new perspective. I don't know if any of you folks get into the publications or have a chance to take a look at this. Outstanding piece of work.

At some point down the road when we go out to consumers and try to educate them on the subject of fuel efficiency for passenger tires, I want you and Bridgestone to be a part of the team that helps us do it.

MR. ROBINSON: Oh, sure.

MR. TUVELL: I mean if -- you could take this same stuff that you have done for trucks and help translate it into the subject of passenger
tires. And I know you can, because you've obviously got the knowledge and you know how to get the message across.

We'd love to be able to work with you on that. This is an outstanding piece of work.

MR. ROBINSON: Thank you.

MR. TUVELL: Your third point in particular, Tim, we talked about it earlier. I would really love to see the citation of the 1.5 kilogram/ton bin width tied to the ISO 28580 task group.

If you can show me a task group report or something where they say that, and they reach that conclusion, I would love to be able to see it. Because I can't find that kind of stuff.

Okay. I can't find it.

MR. ROBINSON: Ray, it's not in there. The ISO 28580 task group submission was not to recommend bin widths. But what they did provide was, to put it in layman's terms, you know, the resolution on our measuring stick, and how accurate that is, such that looking at uncertainty and the risk associated with being close to the edges of the bin, what they would recommend. Which would be, I think, 1.39 as a minimum.
And we've taken the 1.5 as a good round number -- and part of it is based upon the EU proposal -- for setting up our bin widths.

Can you go back, please, to the Bell shaped curve. There's one more point I want to make. And this gets down to this point right here.

These bin widths are approximately about 10 percent apart on average, maybe a little bit more than that. But a 10 percent change in fuel efficiency is equal to about a 1 to 2 percent -- I'm sorry, a 10 percent change in rolling resistance is equal to about a 1 to 2 percent change in fuel efficiency.

So going from a two star to a three star tire, and I get 25 miles per gallon, I get 10 percent improvement, my miles per gallon is going to go, instead of 25, it's going to go to 25.25. So that's very very difficult for the end user to observe.

MR. TUVELL: Okay, now --

MR. ROBINSON: So it doesn't make a lot of sense to make these much tighter.

MR. TUVELL: No, I understand. But I mean this whole bin system and the justification
for it, and how it's tied back to 28580, I can't retrace those steps. Yet I've seen that time and time again in the presentations today. And that's why I'm restating this problem. So, you know, so there's no question in anybody's mind about it.

But while you're on this chart, in a number of presentations today there have been charts that have been reference to the RMA dataset of 200-plus combinations of tire sizes, and I think that's what this is here, too.

Until we're able to get our hands on that dataset to independently analyze it, we're not in a position to be able to look at something like this and say we agree or not. Okay.

So I want to restate this over and over again. The extent to which you're using datasets that we don't have the ability to independently analyze, good for you, but how do you expect me to do anything with it. Okay.

MR. GUINEY: Dan Guiney, Yokohama. Let me try to do my best to help with the ISO versus the calculation of categorical widths.

The best way to describe that is there are available statistical methods that have nothing to do with ISO. They are just basic
statistics that any statistician -- I'm not one, I'm a layman, I understand a good bit of it, but they could come and present to you the exact same terminology, just statistically, how all that's derived.

The ISO group did use methodologies that are common statistics to resolve categorical widths as a judgment for different alignment methods. It's all statistics that's available to anyone.

So, probably what would be appropriate is a future discussion and a future review of the statistical methods to judge the categorical widths. And it really doesn't have any unique applicability to ISO. It was just normal statistical methods that were used to judge alignment methods.

MR. TUVELL: Ray Tuvell with the Energy Commission. Dan, I appreciate the offer and I'll take you up on it.

I actually need two things to help me with this subject area. One is more in-depth and inside information on what happened with ISO and that committee, and what they actually concluded. Because there's been a breakdown in
information getting to us on that. We're getting it now through filtered sources that suggest to us that it is not the direct information that was developed then. And it concerns us a lot.

And then so I'd love to get a more in-depth understanding of what's happening there.

Plus some of the subjects that you didn't mention today on, at least in depth, on 28580. Who's going to be running the reference lab? When? When are they starting up? When are we going to start seeing some of these tires available for other candidate labs to be calibrated against the reference lab? Who's setting up the administrative mechanism for that? So that I will know whether or not this lab has been calibrated against the reference machine.

How's that all being handled? Who's responsible for making sure that it gets underway and gets handled?

I mean I have my list of questions on what's going on with ISO and the test protocol that's endless right now. And we dearly need somebody to step forward who can give us the objective straightforward picture on what's going on there. Because it's of significant importance.
So, really, it's that aspect of ISO 28580 that's more important to me than what do you do statistically and how you can do different analyses.

MR. MEIER: It's Alan Meier. And I had one question about consistency with the European approach. And the last time I heard about the European approach they actually had a couple bands at the bottom that were only 1 kilogram/ton wide. Is that accurate?

MR. ROBINSON: I'm not sure if they were 1, they may be 1.25. We have to go back and look at the EU proposal, but most of them in the range that we're in are same band widths, 1.5 kilogram/ton.

I believe they had some that were a little lower, they were 1.25.

MR. WISCHHUSEN: Yeah, we have to realize the European system is not finalized.

MR. ROBINSON: Right, --

MR. WISCHHUSEN: I mean it's a proposal at this point.

MR. ROBINSON: -- it's hypothetical.

MR. MEIER: So, are you going to propose a different, make a change in these to keep them
harmonized with the Europeans?

MR. ROBINSON: That's not our proposal right now. No, this is our proposal.

Okay, any other questions? Okay, thank you.

MR. TUVELL: Take a break? For those of you on the internet, we're going to take a five-minute break.

(Brief recess.)

MR. TUVELL: Folks on the internet, we're going to reconvene now with the last presentation, Mike Wischhusen of Michelin.

MR. WISCHHUSEN: Okay, good afternoon, everybody. I'm very happy to tell you I'm the last scheduled speaker today. Okay.

I want to talk a little bit about the testing and compliance. And, you know, I brought this point up this morning. Always like to periodically go back and remember why we're here, you know. We're here to talk about AB-844.

And you know, what AB-844 requires is, you know, to select a test methodology; and then based on that methodology, develop a rating system. And then provide or facilitate the reporting of data on tire performance, okay.
That's why we're here.

Now, next slide. At the last meeting, Smithers, I believe it was Smithers, presented some information on the total number of SKUs in the marketplace. It's close. That's a pretty good number. I mean when we look at what each of us have in our own portfolios, their totals are pretty good.

Remember SKU is stock keeping unit. I mean that's not a term, you know, unique to the tire industry, but basically that's, I want a 195/65-98H MXV4. Okay. That's a SKU. That's what you go and buy. It's the part number.

Now we got to remember any count of SKUs in the marketplace is simply a snapshot in time, because that number changes constantly. We're always adding SKUs to the market; we're always removing SKUs from the market.

Now, hopefully, in a well balanced system, you're removing just about as many as you are adding at any given time.

For us, at this point in time, about 10 percent of the SKU count is renewed every year. Just, you know, rough figures. Now, don't make the extrapolation that that says an average SKU
life is ten years. That's not quite true, because not all tires, not all classes and sizes of tires are renewed at the same rate.

The ultra high performance stuff tends to be renewed on a much shorter cycle. Snow tires tend to be renewed on a much shorter cycle. Some of the mass market broad line tires have a long luxurious life. So it's a bit of a stretch to say average SKU life is ten years. But, on average, 10 percent of the total SKU count gets replaced every year. Okay, so that's a pretty good number.

Now, let's go to the next slide. Just, you know, philosophically, the testing that we do as manufacturers historically has been centered around endurance traction and tread wear. Okay, those are the ones we do the largest quantity of testing on.

And interestingly, you know, those are the three things that always show up at the top of the market surveys, you know, what are consumers after when they're looking for tires.

Now, if we start doing a lot more rolling resistance testing it's going to require some significant investment on the part of the industry. I mean that's, I don't think, a
surprise to anybody.

The industry understands that. We accept it. We're happy to do it, but we just want to try to do it in the most economical and most beneficial way.

Okay, next slide. The question of current tire capacity came up, and I will tell you, that is a thorny question. That is not an easy question to answer. It's not as simple as counting excess machines. I mean I think you can go through any one of our facilities, you won't find excess machines. I mean we don't buy test equipment and let it sit idle. I mean that's a very poor investment on our part.

You've also got to realize the machines that are used for rolling resistance testing can be used for other things. So, if we're not running a rolling resistance test on Tuesday afternoon, that doesn't mean that machine is idle. It may be doing another test. Okay.

You've also got to realize it's not only test machine capacity, it's the availability of operators to run those tests. Okay. So you can have the machine, but you don't have an operator, and you can't run any more tests. So you've got
to look at both of those things.

So, now each company, there's no standard model for how we equip, account for and staff our testing facilities. Everyone of us does it differently. So to try to throw us all into one model is a little bit difficult.

So, the concept of excess capacity can be challenging. And trust me, it's very challenging.

If we go to the next slide, we tried looking at it a different way, okay. We kind of reversed the question. Rather than saying how much capacity do you have, and how fast could you test all these tires, we turned it around and said, if we had a time target to do all this testing what would we have to do to our capacity to meet that time, okay.

Now, if you look at current, you know, today capacity in terms of machines, and labor to run them, and in the hypothetical situation that we had to test multiple replicates of every SKU we make, which was in the vicinity of 24,000 there, it's going to take decades to do that. You know, given the current capacity.

And that goes back to my slide a minute
ago, if we're going to do that much testing we
have to make some investment, okay.

So, you know, we did an exercise to look
at that investment. Go to the next machine.
Let's look at the assumptions on the right first,
okay. We assume we're going to test every SKU,
three replicates of every SKU. We are not
counting the additional ongoing compliance testing
or quality control testing that we would have to
do on top of it. We're only looking at the
initial count of tests.

Three-year implementation period, again.
I mean that's a number that's picked out of the
air, but in the regulatory world, the three-year
implementation timeline is not uncommon.

So, now we say, okay, the existing
machines we have, add the necessary labor to take
those machines to 100 percent utilization, all
right. And then add additional machines and
additional staffing to finish the rest of the job.

Again, you know, Smithers reporting,
they're looking at the machine availability
question. Said it's probably about 18 months, you
know, to order a machine, get it installed and
start using it. Again, that's probably a good
So, what that says, though, is if we start today and order machines today, I'm not testing until 18 months from today. So that cuts in half my three-year implementation time. So I now have actually 18 months to do this testing, not 36 months to do this testing.

And you've got all the other costs. I'm not sure in the previous estimates, you know, they thought of things like HVAC costs, electricity costs and all that stuff. But there are operating costs for these machines. I mean they're all electrically driven.

And the other thing, we're not going to design and build a tire in South Carolina and test it -- and send it to France to be tested, okay. Other companies are not going to design and build a tire in Tennessee and send it to Japan to be tested, okay.

The testing capacity exists and the testing capacity that's available is the testing capacity that is where you operate, okay. So the global testing capacity is really not valid. You've got to look at the usable, accessible test capacity.
Okay, so if we do that, with all those assumptions, we're going to buy a certain number of machines to the tune of about $7.5 million, okay. And that's almost 6 million of test machine, itself. But then you can't just put this test machine on a bare floor you know, outside the front door of the test building. I mean it's got to be in a proper environment. So there are some test cell costs that go along with it.

Don't forget, if we're going to be testing three times 24,000 tires, that's 75,000 tires. Those tires cost money. And after you test them you can't sell them, you have to dispose of them. They're a disposal cost. I mean so there are tire costs to this idea of testing.

All those costs, those aren't annual costs, they're capital investments, a one-time cost. But, you know, look at things like waiver. This is the additional people. And we're going to a 24/7 shift cycle, you know. How many people would we have to hire to run these machines 24/7.

You've got energy costs; you've got maintenance costs. I mean these are complex machines, they break, the need preventative maintenance, okay. So there's a cost associated
with that.

Total that all up, you're looking north of $21 million to do that. And, again, heavily driven by that three-year assumption.

Okay, let's go to the next slide. Now, that brings us the question, all that analysis was done on the presumption that we've got three triplicates of every tire. Okay.

Is there another way to do this? Yeah, we think there is. And that would be to develop an efficiency rating system comprised of self-certification plus some sort of an audit system. You know, if we do it like the federal government does it, it's self-certification with an audit. We know they're auditing us, okay. That's kind of an incentive not to cheat.

You can also do it, rather than a government audit, you can do a stakeholder challenge, okay. I don't believe Dan, you know, I want you guys to check Dan, so actually I will check Dan's tire, okay.

But there are ways to do this, okay. So don't think that self-certification is carte blanche for manufacturers to cheat. I mean say certification works. I mean NHTSA uses and trusts
self-certification with the federal motor vehicle safety standards, okay. These are the safety standards that govern the safety of motor vehicles and tires. That's the self-certification system.

Okay, let's go to the next slide. The first option we had, which was do all the testing and submit all the data. It would require tire manufacturers to submit test data on every tire sold in California. I mean that's what AB-844 says.

Now, be realistic. Okay. We don't make unique tires for the state of California, okay. So what that requirement's going to do, we're going to have to test every tire we build, you know, regardless of where it's sold in the United States. I mean that's reality.

I mentioned it before, we're not only talking about the initial testing, but we've also, depending upon the quality system that each one of us uses, and each one of us uses a different quality system, but we're going to have to do periodic rechecks.

Okay, so in addition to that 75,000 test slug you've got to digest, annually, you're going to be doing more testing, which is the 10 percent
of the new SKUs that come into the market, and
however many additional tests you're doing, you
know, just to verify that you're still where you
think you are.

Okay. All right. Now, in our
estimation that data submission option, you know,
this idea of massive amounts of testing is
probably the highest cost and the longest
implementation time of the possible solutions.

You know, you've got capital investments
on the manufacturers part, and the operating
expenses. Whatever organization is receiving this
data has got to invest in the expertise so they
understand what the data is, and they know what
eye want to do with it, and they do whatever it
is they want to do with it. So there's a cost;
there's a cost there to the presumed regulatory
agency.

It's come up a couple of times, there's
a larger investment both for the regulator and for
the manufacturer, I believe it was Dan's point;
and for Consumers Union on consumer education. I
mean this stuff is not intuitively obvious, okay.
I mean if there's one conclusion we can draw from
however many years we've been working on this,
this stuff's not intuitively obvious, okay.

And we can't expect consumers to
immediately grasp concepts like rolling resistance
force, rolling resistance coefficient and things
like that. So there's going to have to be a lot
of education that goes along with it, and that's
not free.

All right, next slide. All right, now
let's look at the other way, the concept of self-
certification. As I said, that is the bible for
U.S. federal laws, U.S. federal regulation, self-
certification. I mean we know it in the motor
vehicle industry, I mean that's the way it goes.

The burden is solely on the manufacturer
to insure compliance with federal safety and
consumer information regulations, okay. It's used
for UTQG, it's used for the federal motor vehicle
safety standards.

It does not specify the means to comply,
okay. It doesn't say you must do this to assure
yourself that you comply. It simply says you must
assure yourself that it complies. And when we
audit you it had better comply. And if we audit
you, here's what we will do. Okay, so that test
procedure for the audit process is known to us,
okay.

So we have the ability to say whatever method we choose is validated by the audit test procedure. Okay.

Next slide. Now, again, it's not only we have to prove to ourself once that it passes the test, we have to continue to assure ourselves that things haven't changed, something hasn't happened that means it isn't going to pass again. So, again, whatever quality system we have in place -- and that's our choosing; I mean that's not specified by the regulation -- we're going to do more testing based on that.

Okay, next slide. All right, now why does self-certification work. There are significant penalties for noncompliance, all right. I mean if we screw up we know there's fines for not complying, okay. If we get caught not complying we pay a hefty fine. Okay, that's a big deterrent.

Also, the consequences of noncompliance, you know, in addition to the cost, that's a damage to our company's reputation, okay. And in the business world when we're selling products to consumers our reputation is the most important
thing. Flat out, okay.

If your consumers, if the purchasers of your product don't trust you, they will not buy your product, okay. We guard that very zealously.

And there's the periodic government auditing. I mean that's the way we work with NHTSA. They periodically audit. Doesn't have to be a government audit, it could be some sort of stakeholder challenge system. It's going to work the same way.

Okay, next slide. Now, what are the benefits of a self-certification system? It minimizes the government bureaucracy that you need to put in place to manage a system. It doesn't eliminate it. It reduces it. Maybe minimize is too strong, it reduces the bureaucracy that's needed to ride herd on another type of system.

It give us, the companies, the flexibility to design a compliance program to meet those needs. And I'll tell you, flexibility equals reduced costs, okay.

When a procedure is dictated it's expensive. If the guidelines are dictated, if you have the flexibility each one of us is going to choose a slightly different path, which reduces
our costs the most. But still gets the end
result.

And we'll use a variety, you know, a
combination of methods to insure compliance,
testing, I mean testing is the most
straightforward. You throw it on the machine and
you see what it does.

We've got some pretty sophisticated
computer models, okay. And we can predict very
very closely a number of performances of a tire,
okay.

Now, testing and computer modeling are
not mutually exclusive. Based on what you see in
the testing you develop the theory that lets you
develop the model. Then you run the model and you
go back and you check the model. You validate the
model with testing. So it's a combination there.

But long term, once that model is
developed, you can significantly reduce the number
of tests, all right. And there, again, that's the
benefit to the manufacturers of not over-
specifying, okay. So it's, you know, self-
certification if a good point there.

You know, quality control in the
manufacturing process, some companies will pick
random tires off the line and test them. You know, some companies will use predictive modeling. Some companies will use architectural measurement controls. There's many different ways to assure that compliance.

And, again, we do things we're not going to tell you about. I don't want these guys, you know, to hear what we do. I mean and there is, accept it, guys, there's a lot of trade secret in this business. Okay. A lot of proprietary information.

So every once in awhile you're going to ask something and we're going to smile and say, I can't answer you.

Okay. Next slide. Now, let's look, you know, Jim made a proposal for a self-certification based energy efficiency rating system, okay. So now let's go take self-certification, which the last couple slides been talking about. Now let's take self-certification together with a proposal for an efficiency rating system.

Again, from our perspective, the most cost effective means to assure compliance, and that's cost effective for the industry, and it's cost effective for whoever is going to be
monitoring the compliance with the regulation.

Self-certification is not without cost. It's not free, okay. But it's a lower cost than this mandated you must test everything.

Most importantly, it accelerates the environmental benefits by compressing the implementation time, okay. If we've got to purchase, install and test every SKU, you know, we're, like I said, I mean we're out here three years from now, okay.

If we can do this based on a self-certification system, you're going to cut that implementation time, you know, I can't give you an exact number, but you're going to cut it by 30 percent, you're going to cut it by 50 percent. You're going to get faster; you're going to be able to implement faster. Consumers are going to benefit faster. And society benefits faster.

And remember, that's what we're here for, is the consumer benefit and the societal benefit. And this is going to get us there faster.

Okay, next slide. Pretty much what I've said, you know. If we're not required to test every SKU we'll do a lot of statistical modeling
and sampling techniques, which reduces the cost requirements.

The test demand is reduced to a level manageable probably with awfully close to our existing machine capacity, okay. Not our labor capacity, but our existing machine capacity. So the industry can dramatically reduce that $21 million figure. And what was it, 7 or 8 million of that was equipment cost. We could significantly reduce that if we can manage and reduce the amount of mandatory testing.

And we can get to the point of assigning grades to tires without suffering this lead time, the delay of the lead time, to do all the testing, all right.

Next slide. We tried to put some numbers on this, okay. I mean this is not precise, okay, but we're looking.

Again, let's look at the assumptions. RMA can only talk of RMA members. Okay, there's eight RMA member companies. The nonRMA member companies haven't participated in this, so we can't say anything about them.

Even self-certification still encounters the costs associated with testing and rating.
tires. There's some testing that's going to be
done, all right. The rating system addresses
existing SKUs, okay. We don't necessarily have to
go back and test every one.

Again, assuming probably within 24
months we can do the necessary testing that we
have to do, all right. Again, it's an assumption,
it's an assumption.

We think we'll end up testing about 20
percent of the SKUs, okay. Because when tire
lines are developed, you may have 20 different
sizes in a tire line. If you test every fourth or
every fifth one through the size range, you can
extrapolate what the ones in the middle will be.
And that's the significant reduction in test
capacity, is operating on that sort of statistical
methodology.

We think we can do this with no new
equipment purchase, or at least a minimal
equipment purchase. All right. And there are a
couple companies, I mean, that are within RMA that
do not have the existing test capacity to do this.
They're going to have to make a choice. They're
either going to invest in that machine capacity or
you're going to go to a third-party source for
the testing. All right. But, again, that's their choice.

All right, next slide. If you just, you know, kind of summarize the benefits of the self-certified energy efficiency rating system, now we were looking at in excess of $20 million for the full fledged test everything. Compared to about 1.5, a little over 1.5 million for the self-certification based system.

If we have to test everything we're looking at three years to collect the data before you start developing the rating system.

We said here 24 months. I mean if we can do the self-certification bucket type system that Tim talked about, we'd probably have it rolling in about 24 months. Again, I mean, that's not a commitment. It's an honest estimate of where we think we can go.

Look, I mean face it, the complexity, the questions we have faced today and in every one of these workshops we've had, this is complex stuff, okay. Somebody has got to understand it. And I think for the regulatory agency that's going to be managing this thing, it's going to be incumbent upon them to have that expertise. And I
suspect there's a cost involved with acquiring or developing that expertise.

If we don't have that massive data to manage, I think you can get away without the expertise. Or at least a lower cost expertise.

All right.

Okay, next slide. Now, this is the one we talked about. You know, I think self-certification gets a bad rap partly because it gets associated with UTQG, and UTQG gets a bad rap. Some of it deserved, some of it not deserved.

But let's specifically look at a case of UTQG traction. When the UTQG traction system was created 30 years ago, roughly, the boundary levels of the different letter grades, A, B, C, were decided to evenly distribute the then-current population of tires amongst those three grades.

Fast forward 20 years, all of a sudden everything was crowded up in the As. Very very few Cs, only a couple more Bs, everything was in the A. You had this mass population and you knew they weren't all equal, but they were all rated A because that's what the boundary was.

So, NHTSA actually took the step of
creating a higher bucket. And if you look today
you've got a huge population in the AA, good
population in the A, and Bs and Cs are dropping in
population.

So, I mean, that sort of a bucket

system, I'll call it a bucket system -- that sort
of a bucket system does work at affecting consumer
behavior and affecting manufacturer -- call it
manufacturer priorities or development priorities.
Okay.

You look at that UTQG traction case and
that's what it tell us. Now, when I asked Gene a
question, the rap, I think the valid rap for some
of the UTQG tests is that the regulation requires
the tire must perform at least at the indicated
level.

What that does is allow the manufacturer
to effectively derate a product for whatever
reason. But that's a very simple solution. Don't
make it a minimum rate. Simply, the tire must be
marked with the grade that it achieves. Plain and
simple.

It's not a fault of a self-certification
system. It's a fault in how the regulation is
written, and there's a very simple solution to
that. So we can avoid repeating that error.

Okay. And again, the conclusion, you
know, manufacturers change their product offering
and consumers change their purchase behavior.
That's what we're trying to do.

All right, next slide. So, in summary,
you know, the RMA, Tim said it, I'll say it, we
support a self-certified tire energy efficiency
rating system, okay.

We're going to get to where we want to
be faster. And we're going to reduce the industry
costs; and trust me, you know, you know how the
auto companies are faring in the economic
situation today. All right, we're not a whole lot
different than the auto companies.

And this is -- in Goodyear this is a
low-margin business. Scraping up $21 million of
investment is not going to be easy.

And, you know, I've labeled the industry
capital expense, again, I think there is a reduced
expense on the management side of a program like
that, too.

Now we just talked about the concerns
about the derating of UTQG grades is not a fault
of self-certification. Regulations can be written
to prevent the possibility.

I think that's the last slide. No, wait a minute, I'm sorry. Yes, it is. It's the last slide.

All right, questions?

MR. TONACHEL: Mike, this is Luke Tonachel from NRDC. I just wondered if you could comment on what data you would expect to report under your self-certification program.

And I guess where I'm going with this is that you indicated the use of modeling tools for some of your SKUs. It seems like even with the modeling tools you'll come up with a value that you'll stand behind in case you get audited as to what that value of rolling resistance is for that particular SKU.

Any reason why you couldn't provide that value?

MR. WISCHHUSEN: I --

MS. NORBERG: I think he's asking the datapoint versus the bucket reporting, if you're modeling to a datapoint, I think, is the question.

MR. WISCHHUSEN: Our --

MR. TONACHEL: Do you want me to repeat it?
MR. WISCHHUSEN: Yeah, could you repeat it, please.

MR. TONACHEL: Yeah, sorry. The question is you had indicated under your self-certification -- now I'm getting feedback.

MS. NORBERG: Oh, sorry -- it's just hard to hear you here, so I was trying to make it more --

MR. TONACHEL: Oh, --

MS. NORBERG: Sorry about that.

MR. TONACHEL: I'll try to speak up a little bit. You had indicated under a self-certification program the -- you could utilize some modeling techniques you could use to get to some SKUs, maybe SKUs that are in the middle of a whole range of SKUs.

And I was wondering about what you thought of as your data reporting capabilities under a self-certification program. And could you provide sort of those modeling results for those SKUs with the idea that, you know, you're open to auditing and so you'd have to stand by some value for any individual SKU.

MR. WISCHHUSEN: Yeah, yeah, you could supply that number. Dan Guiney is going to offer
an answer here, too.

MR. GUINEY: Yeah. If you go back to the presentation this morning, we would stand behind the category with which that tire is assigned to.

We would not necessarily be sharing any data, nor would we be expected to be audited against a numeric value. We would be standing behind -- it is in that category that was approved per the regulation issued.

MR. WISCHHUSEN: Right. And, again, I mean that goes back to the uncertainties that are introduced by the multi-lab situation.

You know, if it were my lab alone, yes, we could do that. But for me to submit model numbers and Dan to submit model numbers, you're going to end up with the same concern about uncertainty with multiple sources.

MR. TONACHEL: Well, I guess that's the reason why we were delving into this whole uncertainty question this morning, was to understand that value a little better. It's not my sense that coming out of today that we really actually have a clear answer on that.

MR. GUINEY: Yeah. And you could, if
you ended up the regulation required a value, we
would be forced to say it's this plus or minus
something. Which ends up being, you know, a
number.

MR. TONACHEL: Well, there's still value
in that. You know, one of the things is that
you're going to have people outside of the tire
industry looking at the whole set of data and
getting a sense of what's happening in the
marketplace that there could be, you know, some
analysis of what's being sold and what kind of
benefits come from that.

And also, you know, -- you also have the
issue of products lining up on the, you know, sort
of in the -- function of the bin on the different,
where the thresholds occur.

I mean that's been seen with many
regulatory programs that operate in that way.

MR. WISCHHUSEN: Was there a question in
there?

MR. TONACHEL: Well, I was responding
just to the point of whether or not there's value
to providing a number.

MR. WISCHHUSEN: Okay, but, you know,
the uncertainty still exists around that number.
I mean it's the same uncertainty that exists about a number at the border of a bin. I mean any number, it still has that uncertainty associated with it. And that uncertainty comes in the largest part due to the fact that you're trying to accommodate a system with basically an open-ended number of data sources.

MR. TONACHEL: Yeah, I recognize that there is some level of uncertainty. I'm not clear on what that level is.

MR. WISCHHUSEN: All right. I think earlier there had been a proposal, and I think an acceptance of the proposal that to perhaps convene another discussion specifically to talk about that subject.

MR. TONACHEL: Okay.

MS. NORBERG: Mike, with your indulgence and my apologies, I just want to -- on that self-certification slide I just wanted to correct the cost number that is listed for the self-certification option. And this is my mea culpa for -- in the room. I put the wrong number on the spreadsheet. But if you were to look back at the self-certification where we have the 1.6 or something like that --
MR. WISCHHUSEN: The comparison?

MS. NORBERG: Yeah, it's -- there you go. Yeah, about two slides on that one, and the one before that you just saw. The number should be 3.9 million. And I apologize. It just -- it was my fault pulling the wrong number off of the spreadsheet. So I just wanted to correct that for the record, and for the materials that are posted on the web, perhaps we can correct that so that we get the right information available.

MR. WISCHHUSEN: All right.

MR. TUVELL: Ray Tuvell with the Energy Commission. If it's okay with you, Mike, I'd like to go back and just address it slide-by-slide. I prefer to do that. I didn't want to interrupt you as you went. So, if you can go back -- okay, so from there go forward, please. Right there.

The machines are not standing idle; the machines are used for testing. Each company equips its staff, the excess capacity issue. And then the next slide.

Given current equipment, staffing levels and time, and you also made the issue of the problem that you thought that we were grossly in error in not associating location of machines and
tires and companies.

MR. WISCHHUSEN: Yeah, I think I said
it's more correct to assume that the local testing
capacity is what we have access to.

MR. TUVELL: Right.

MR. WISCHHUSEN: And I don't think I
used the word --

MR. TUVELL: And, and so my needs are
very simple. And it's been outstanding for over a
year and a half now. Give me the name of the
company, the location of the test machines and the
number of the test machines so I can better
appreciate this issue.

MR. WISCHHUSEN: I know for us we can't
do that, because, you know, there are not rolling
resistance machines and nonrolling resistance
machines. It's --

MR. TUVELL: That's fine. We'll all
apply it the way you want so we can understand it.
But part of the dilemma, you know, and part of
what we tried to achieve in the Smithers analysis
that we had done is we broke it down by company to
understand this issue.

And the dilemma I'm having throughout
your presentation is you lumped the industry
together. We don't see this as one company; we see it as multiple companies, each with their unique issues. Each with a number of testing facilities -- a number of different locations, and each with its separate needs associated with how many SKUs.

And so what we need from you in order to appreciate some of these arguments that you're bringing to us, give us the breakdown by company, how many test machines, where are they located.

With that level of understanding we can start to better analyze and appreciate some of your points.

MR. WISCHHUSEN: Okay, understand your question.

MR. TUVELL: Next slide, please. Same issue here is that this isn't helpful to me to understand this problem as the industry as a whole. If Michelin has a specific issue where Michelin has no machines and a zillion SKUs, and we decide that we want to pursue in testing, then we need to sit down with you to understand your issue versus Cooper's issue versus Goodyear's issue.

If it turns out that there's a need to
come up with a testing schedule and data submittal, if this is the direction we go, then it'll be unique to each company and their circumstance.

And so give us the breakdown by company. This is not, from our perspective in order to understand it and advance on this issue, we need to understand it company by company.

So, gross numbers like this, I mean, nice; take these numbers, break them down company by company so I can see what we're talking about here.

MR. WISCHHUSEN: What will you do about the nonRMA member companies? Because only RMA member companies, I think, are represented.

MR. TUVELL: Well, I know. Where can I get them here, right, you know. I mean I sent out, before our first workshop, over 150 letters to what I understood to be tire manufacturers throughout the world who supplied to the United States. And I gave them our website and I gave them our information.

Now, are they monitoring? I don't know. Okay. But we're satisfying our legal requirements on notification. Okay.
MR. WISCHHUSEN: All right.

MR. TUVELL: Next slide. It's extremely important for us that you delineate in detail this definition of what certification is, self-certification is.

This was the first time I've heard some shot at that when Dan came up and said self-certification, to us, is we will give you a category. We will not give you a number.

And if that's what it is, then we need to understand it clearly, okay.

MR. WISCHHUSEN: Okay, you're confusing self-certification with a proposal for a rating system. Self-certification is very simply manufacturer responsibility for the assurance.

MR. TUVELL: Oh, okay.

MR. WISCHHUSEN: That's self-certification. You're talking about a proposal, or our proposal for a rating system.

MR. TUVELL: Well, actually, I thought they were both -- I understood the way you described it as one and the same.

MR. WISCHHUSEN: No, they're two separate concepts. Two separate concepts.

MR. TUVELL: Okay. Well, then let me
say it that way, then. In the case of this rating system then you said it is we will supply you only with a letter, definitely not a number.

I wish I would have seen that in something in writing with all the other details associated with that so we understand what that means.

And you can see the confusion I'm having. The way the term self-certification continues to be used in this whole discussion is incredibly confusing to us. We have never -- we've seen it associated with, oh, it's the way the feds do things. Oh, no, it's part of the rating system. No, it's both together. See, it goes hand-in-hand.

We need it clearly spelled out so we can understand it, and so everybody can understand it.

This matter, and bear with me here, I use the term self-certification, you use the term rating system.

We spent quite a bit of time this morning talking about the variability of machine-to-machine testing as being a huge issue, okay, despite the fact that the 28580 committee drilled in on that to try to do their best to come up with
a methodology to nail it, okay.

    Why? Because it's apparently, and I can appreciate it, it's a significant issue among the tire manufacturers. I mean you would like to know that any data coming from any source can be comparable. And I appreciate that issue.

    Here's my dilemma. Under this self-certification process that I understand, go through a couple slides here to your benefits -- you call it benefits of self-certification. Right there, stop there.

    Let's look at bullet two down there, the computer modeling. Can Michelin's computer model predict the rolling resistance of Cooper's Tires?

    MR. WISCHHUSEN: Relative to our test lab numbers we would get, we could try. But the problem is we're not going to have access to their proprietary materials --

    MR. TUVELL: Okay. So how would I know, then, that your data's comparable?

    MR. WISCHHUSEN: It's because Cooper would do their model development against the testing that they do in their labs. And their modeling would match their testing.

    My modeling would match my testing, and
we're right back to the lab -- issue, which is
what I said in my presentation.

MR. TUVELL: Well, but you see where I'm
going here is that --

MR. WISCHHUSEN: No, I don't.

MR. TUVELL: Well, in the ISO 28580
testing they identified the lab-to-lab issue and
they came up with a methodology to resolve it.

MR. WISCHHUSEN: To minimize it. You
can't resolve it.

MR. TUVELL: To minimize it. Right, and
we're trying to find out exactly what level of
accuracy they were able to achieve, or their goal
is for achieving.

And you mentioned a great deal of
concern about that. Yet, in your computer
modeling approach you say, well, will this model
submit to it. There has been no testing of
Michelin's model against Goodyear's model, or
Michelin's model against Continental's model.

MR. WISCHHUSEN: Because Michelin's
model would match Michelin's testing. Goodyear's
model would match Goodyear's testing. And there
has been alignment between Michelin's testing and
Goodyear's testing.
MR. TUVELL: Okay, but none of this is in the public domain, is it?

MR. WISCHHUSEN: No, because the ISO project is --

MR. TUVELL: No, no, no, no, no, the modeling capability.

MR. WISCHHUSEN: Oh, no, we're not going to share proprietary models, no way.

MR. TUVELL: Okay, but that's the important point here to us, and I want you to understand that, okay.

You're representing to us that we should be willing to accept the results of a model that we've absolutely never seen work, that is totally proprietary, never been -- not in the public domain, never been subject to a professional paper tested against 28580 that we could review. Never been tested against other manufacturers.

Do you see the position you're putting us in?

DR. HAWLEY: I think --

MR. WISCHHUSEN: I guess, no, I don't.

I mean I don't understand.

MR. TUVELL: We have no basis for understanding whether or not your results can be
compared with your results, or your results, or your results.

MR. WISCHHUSEN: Anyone else care to --

DR. HAWLEY: I think Mike's position is that -- I'm sorry, Mark Hawley with ENVIRON.

I think what Mike is saying is that if you use modeling to fill the gaps in your testing program, so for instance, you have the same tire manufactured in ten different sizes, and you test the smallest, the one in the middle and the largest, you don't need to test every intervening tire. You can develop a computer model that allows you to predict the RRC of those intervening tires.

And then you're interpolating, you're not extrapolating. And you have a direct comparison in ISO 28580 of the test values at each end and the middle of that range.

MR. TUVELL: Yes.

DR. HAWLEY: So that Cooper tests theirs and models the ones that they don't test. Michelin tests their and models the ones that they don't test. And they have a good idea of how accurately your computer model is estimating the untested tires in each of their own range.
Then in order to understand how much
difference there may be between the modeled values
between Cooper and Michelin, you look at the
interlab alignment. Those things have been lined
up, the tested values have been lined up. And
you're only interpolating between aligned values
at this stage.

So the alignment reduces the variability
between the computer modeling results, as well as
between the test results.

MR. TUVELL: Well, maybe it did -- maybe
it did for Michelin, but it didn't for me. See,
if you're asking me to accept this information,
and, you know, we spent quite a bit of time
talking about 28580, and there's documents
associated with the quality of the data coming out
of 28580, and it's transparent, and it's public,
and anybody who wants to get it can take a look at
it and understand it. Then we start getting a
level of comfort about what can come out of that.

I don't have access to these proprietary
models. I don't have any ability to get a level
of comfort associated with it.

MS. HOLMES: Caryn Holmes; I'm with the
legal office at the Commission. If I understand
what you're suggesting it's that you would be
testing some -- there would be the ISO tests
conducted on some subset of sizes within a given
model.

And then there would be a computer
program that's used to extrapolate -- or
interpolate the results for the other tires that
are not tested pursuant to the ISO --

MR. WISCHHUSEN: No, --
MS. HOLMES: Go ahead.
MR. WISCHHUSEN: Actually the --
MS. HOLMES: Help me out.
MR. WISCHHUSEN: Their is a computer
model that will predict the performance value for
a tire design. And then the validation is to do
the interpolation between the tested to show that,
indeed, my predictive number falls on that
interpolated line.

So, it's kind of a two-step process.

MS. HOLMES: So is there -- if the
Commission, and I'm not suggesting that they will,
but if the Commission were to accept that kind of
an approach for purposes of this rulemaking, is
there a problem with us specifying that particular
approach where there is some combination of
modeling and testing, as opposed to what I'm
hearing you suggest at this point, which is just
we'll figure out how to do it, ourselves, and Ray
saying he's very uncomfortable with it.

So, I'm asking whether there is some way
to draft a program that specifies the way that the
combination of ISO testing and modeling would be
used.

MR. WISCHHUSEN: I think, yes, there
could be. I mean I can't tell you exactly what it
would be right now, but, yes. I mean that's a
fertile ground for discussion.

MS. HOLMES: That was my only question.

MR. TUVELL: And I hope I didn't belabor
the point, but for some reason I think there's a
failure of communication on this issue where
you're understanding where we're coming from.

We're trying to -- I'm foreseeing a
situation maybe different than yours. And so
maybe I want -- it would be useful for me to
characterize the situation so you can understand
better where I'm coming from.

I don't necessarily see a circumstance
where it would be acceptable to report a letter or
bin. I see a circumstance where it's going to be
more desirable to report a number. Okay.

Now, we can define fairly straightforward the basis for doing that.

Somewhat similar, for example, we could build off of what's going on in the OE marketplace.

We know, for example, we've talked to people at Ford; they ask you to submit a sample size of three tires, rolling resistance on three tires, and they take the mean.

We could go by definition, that's it.

By definition the rolling resistance of that SKU tire would be 28580 test of three tires and we take the mean and that's it, by definition. And we'll say that's representative. That's what they're doing in OE right now, seems to be working.

Or you can come out with different methodologies. You would say sample size of three, take the mean, add two standard deviations.

Fine.

It's a definitional issue, okay. And then you could use that number and say here they are, this is each one of Cooper's tires, this is each one of Goodyear's. And it was based on that definition which we just defined.
And so it's in the context of trying to understand the potential for such a system that I start thinking about then how do we get data that could feed into that system. And my sense is that 28580 could definitely do it for me. But this whole matter of computer modeling capability of the industry to me is nothing but a black box. I mean I have to tell you, I have no idea what goes on; no level of confidence in how I can compare results against each other to assure this ultimate goal that I have of, you know, telling the consumers that our database is based on reliable numbers that can be compared one against the other. Okay.

Regardless of what we end up putting in the rating system we get out in the public, we have to have this level of assurance of a reliable base of information that underlies this, or it's a house of cards.

And so that's where I was trying to go with this, and where I was trying to go this morning on the reliability of the 28580 test. Because everybody is representing to me that the 28580 group did a hell of a good job. And they've come up with a fairly accurate system.
Because that's what was perceived as the need in this industry way before I got involved in this stuff.

MR. ROBINSON: Ray, Tim Robinson, again. Sorry, but I guess I don't understand the need for reporting exact data on a specific tire, as long as we report what's required of the tires, what bin or what category it fits into.

And it's the tire manufacturers' responsibility to assure that if we say it's a three star tire, it's a three star tire. And we do that now with UTQG, we do it with UTQG primarily, but we assure based upon modeling and test repeatability and tire-to-tire variation that it fits within the category that it's designed for.

So I guess the question is why would you need all that information to assure, when all you need to do really is audit periodically and say, Bridgestone said this is a three star tire, we'll test it, we'll see if it fits within the bin that we've already prescribed as a three star tire. If it fits in then it's okay. Why do you need to manage all that additional information? It just seems to me like
excessive cost and expertise that's required by
the CEC.

MR. TUVELL: Well, Tim, I appreciate you
bring it up because I think this is another one of
the problems where communications have let us all
down.

I don't know why somebody presumes
there's going to be a star system.

MR. ROBINSON: Oh. It doesn't have to
be a star; whatever system it is.

MR. TUVELL: What if it turns out to be
a number system? If it turns out to be a number
system you need numbers.

MR. ROBINSON: Well, or you need a
minimum number, say we say a 10 equals an 80 on a
scorecard system. We would self-certify that this
tire meets an 80.

So then you would test it through an
auditing system; say, okay, it meets at least an
80, even if it's an 81 or whatever.

I don't see why you need all the
information, because then you have to manage it
all. We have to report it all, we have to measure
it all.

MR. TUVELL: Well, --
MR. ROBINSON: -- just for you to require the expertise then to go through and analyze it.

MR. TUVELL: Well, no, I understand and I appreciate those issues, and you're absolutely correct. There's costs and manpower associated with all of this for all of us.

And it's one of the points that I tried to get across in our last workshop. The Energy Commission is different, and historically has been different in how we deal with products than does NHTSA.

Our history is based on energy efficiency types of requirements on products where mandatory testing is the backbone of it. And significantly detailed data systems exist throughout. You name it. Windows, appliances, cool roofs, the list goes on. Be happy to show you the data that we manage and how we go about doing it.

So I want to assure you this is not something unique to the tire industry, we're going to come in and find the most -- no, we do this all the time, and we're very familiar with what's required to do it and handle it. Okay.
The issue here, to us, principally is where do you get this accurate information to even start with. Because that's what the consumer is lacking right now. They can't look at a tire and identify energy efficiency. I can't look at it and neither can you, probably, although you have, I'm sure, a lot more history than me.

How do we get an accurate base of information by which we build a system on?

MR. ROBINSON: Well, I think that's what we just described what our proposal would be, is to, you know, use our star rating system using a self-certification type basis. Tying it to miles per gallon saved, which I think is sufficient to meet the requirements of the regulation.

MR. TUVELL: Okay, And so, but you understand my point, I think, that --

MR. ROBINSON: Yeah, I understand your point, Ray. But the option you have is auditing by a third party or whatever, to assure that we are in compliance. Which would save us a tremendous amount of burden in the tire industry to do all the additional testing, all the additional reporting when we have all these models in place.
And what it will do is it will drive our models to be more precise. It'll drive our repeatability to be more narrow, such that we can rate tires in a higher category.

MR. TUVELL: Okay, so, let me put this challenge out for you. How do you help me attain a level of comfort about what you're models can do, and can it overcome the concern I have about comparing data from Bridgestone versus Michelin versus Goodyear.

How do you -- I mean, this is your -- I don't need the answer now, go back and think about it, you need to help me overcome that problem. Because I don't know how to overcome that now, because I've never seen your model; they're not public domain; they've never been tested against each other.

It's coming down to take my word for it, Ray.

MS. HOLMES: Just a question.

MR. ROBINSON: Right. With the ability for you to audit and check. These models are proprietary, as Mike mentioned. Everybody has their own proprietary models. They're all based upon finite element analysis. They're the future.
of tire production, tire development.

We try and do less testing, more modeling, because testing is very expensive. So that's the wave of the future.

MS. HOLMES: Is there information that's publicly available that could be brought into this proceeding that correlates the results of the models with the test results using the ISO test, in particular?

So that instead of you're saying, trust us, our models, we have lots of economic incentives to make our models work.

You could actually provide us something that shows some sort of data that shows a correlation between your results, the results of your models and the results of the testing that we would like.

See, I'm trying to figure out how to bridge this gap.

MR. WISCHHUSEN: Yeah, I think there are probably several papers on the use of finite element analysis techniques for predictive modeling and tire design. That, I think, exists.

Now, the link to 28580 I'm less certain about just because of the shift in time. That
finite element work was done several years ago
before 28580.

But there would be, you know, a critical
part of a scientific paper is the validation by
testing.

MS. HOLMES: Right.

MR. WISCHHUSEN: Probably either J1269,
you know, the old SAE procedure, or the older ISO
procedure, but we showed earlier this morning that
all of that --

MS. HOLMES: Right, right. So the --
right.

MR. WISCHHUSEN: -- procedures match the
new procedures. So, it would be compared to a
testing --

MS. HOLMES: I'm just offering it as a
suggestion, --

MR. WISCHHUSEN: Yeah.

MS. HOLMES: -- as a way to bridge the
gap.

MR. WISCHHUSEN: We'll look for it.

MS. HOLMES: If there's data available
that can give us confidence, something other than
trust us, that those models provide reasonable
representations, that would be good.
Particularly if it's tied, as I said, to a requirement that a certain amount of testing be done.

MR. WISCHHUSEN: Yeah, finite element analysis techniques are open market. I mean they're out in the market. What becomes proprietary about the models is how we handle material properties and what the specific properties of our proprietary materials are.

MS. HOLMES: I'm familiar with finite element models with groundwater modeling, not tires.

(Laughter.)

MR. WISCHHUSEN: At some level it's the same.

MR. TUVELL: I wanted to present this slide just very importantly, to try to get this issue in context. I want you to see another way we look at this matter of positive testing relative to individual companies.

This is -- I pulled this 2008 North America sales data out of the tire business. Public document. Goodyear, 7 billion plus; Michelin, 7 billion plus; Bridgestone, 7 billion plus. I'm telling you numbers you don't
understand, I mean that you know.

And this is North America, by the way, not global. Probably multiply each of those numbers by four or five to get global sales. I'm not exactly sure.

The test costs are the numbers that was presented by Bruce Lambillotte of Smithers at our February 5 workshop, again. And --

MR. ROBINSON: I'm sorry, Ray, those are based upon the capacity --

MR. SPEAKER: Come up to the mic.

MR. ROBINSON: I think that's where we have an issue again. This is Robinson from Bridgestone. I think that's where we have an issue that, in our opinion, over-stated excess test capacity of 25 and 50 percent.

That, to us, is unrealistic.

MR. TUVELL: No, I understand. I hear you, and I requested more detailed breakdown of how you got your estimates so we can better understand that.

And so that's why I'm saying this is where the source of our numbers came from. And so I just did a sample division and took those test costs and divided by North American sales to get
percent of sales.

So, if our numbers are accurate, the
test costs that we would -- some sort of a
mandatory testing of all SKUs would impose, for
Goodyear would be a .016 percent of sales.

Now, yes, it's a bad economy, and I'm
not going to shortchange anybody on dollars. And
I'm not going to suggest that that's, you know,
lost in the noise. I'm not saying any of that.
I'm trying to present this stuff in context.
Okay.

My concern is Cooper's. Frankly, I mean
those numbers are big because of the SKUs.
Because of all the -- and I'm pretty much sure you
don't have a lot of testing capacity because
you're not in the OE business.

And so I look at this as a company-by-
company issue, and would like to understand it
that way, and like to see the data presented that
way. Because then we can deal with it that way.

But lumping it all together, the
industry as a whole as one and the same and all in
the same basket, no, it's not. It's not. Okay.

And so it's not helpful for us to see
this stuff all lumped together. It confuses and
compounds the issues in ways that are just not
very helpful to advancing these subjects, to us.

MR. MEIER: I've got a couple questions
related to this, that's why I suddenly got really
eager to ask a question.

Do you know how much it costs per tire,
or something like that, to put on this label? Did
you divide this by the number of tires, the 20
million or the 1 million. So it's cents per tire
cost?

MR. WISCHHUSEN: I don't follow what
you're asking.

MR. MEIER: Well, if you took the total
cost of this information program and divide it by
the number of tires, presumably it's going to be a
certain number of --

MR. WISCHHUSEN: Well, you know, if you
look at the cost numbers we presented, you know,
on one of these slides --

MR. MEIER: Yeah.

MR. WISCHHUSEN: -- and you know the
approximate number --

MR. MEIER: Number of tires.

MR. WISCHHUSEN: -- of tires sold, --

MR. MEIER: So it's a very small
fraction of a penny per tire. And do you have any
idea how it is in other products that have energy
labels?

Because, you know, almost -- these
singular labels exist in refrigerators, air
conditioners, and radios and televisions, I guess,
if they're EnergyStar and everything.

So it's not that unusual a burden to get
an energy label on a product. And somehow they
figured out how to do the costs.

But it would be interesting to compare
the costs, the testing costs in these different
products, because I don't know. It might actually
be very different.

But I wanted to ask a couple other
questions about testing. So when you send a --
when an automobile manufacturer requests
information about your tires, how do you report to
them? What do you report to them in terms of
data? Is there a form or something that you might
even be able to show us?

MR. WISCHHUSEN: One of the guys that
worked more with the OEs want to field that one?
I don't do a lot of OE work.

MR. GUINEY: There's two types that I'm
familiar with. One is they present us a target specification that is an RRC number. And then they ask for test reports.

So if we generate a test report off of our test machine, they can ask for that complete test report. And they do.

If I go out to an independent laboratory and attain that, we send them that complete test report.

So they utilize all of the data from a typical test report for their purposes, however they -- whatever the -- and that's a key point. It ends up being whatever the customer demands. And the customer understands the cost of what they demand sometimes.

MR. MEIER: Right. Because I saw some numbers that range from the manufacturers requiring three tires, PSA, and France requires ten tires to be tested. It makes one wonder, well, why do they have those differences. And I think you explained that.

MR. GUINEY: Yeah. It all goes back to what they do internally in their own engineering protocol to do something with that.

And we meet their requirement, is the
best answer.

MR. MEIER: Okay. Can I go back to that
graph, because now I want to talk about
alternative rating systems.

I thought this was a very useful plot
because it showed the 95 percent confidence level
of each of these tires. And that is to say that
the top of each of those bars equals the -- you're
95 percent confident that the value is that or
below what's reported there.

MR. ROBINSON: Well, the mean is within
that range.

MR. MEIER: Yeah, yeah, that SKU,
because you're testing them, that product run is
going to be less than the top of that.

So that here you could say, as an
alternative rating system, you could say look, you
simply test these models and report that top
value, the value that's right at the top of the
bar. And we're saying we're 95 percent confident
that the rolling resistance is equal to or less
than that value.

Is that -- that's an alternative way of
reporting the data, isn't it?

DR. HAWLEY: Let me suggest what Mike --
THE REPORTER: Can you come to the microphone, sir?

DR. HAWLEY: Just one particular problem that might arise if you do that is exemplified by looking at the bars at about number 45 or so, that have relatively wide error bars there.

If you look at the top of those, say at 11, and you go over to the right, there's a large number of bars that have lower -- excuse me, higher average rolling resistances than that, and lower tops of the bars.

It would appear that the tires with the very large bars have higher rolling resistance than some of the tires where the averages are actually lower than the averages for those.

I'm not sure I've expressed that --

MR. MEIER: Yeah, I understand exactly what you're saying, --

DR. HAWLEY: Okay.

MR. MEIER: -- and there are two things going on. One is you see those tires at 49 that have very high large bars, if you wish, confidence bars. Those, we know there's a lot of product variation in them. And there's a strong -- that makes the manufacturer have a strong incentive to
prove quality control and make that narrower so
that they can confidently report a lower value,
isn't that correct?

DR. HAWLEY: I think that's probably
ture. I just --

MR. MEIER: Yeah.

DR. HAWLEY: -- point those out because
those --

MR. MEIER: Yeah.

DR. HAWLEY: -- those are the most
obvious examples.

MR. MEIER: And there's still another
problem here, because this doesn't exclude the
alignment error. And so we have to figure out
well, how much more would the manufacturer have to
add to include the alignment error.

I thought it was only going to be a few
percent; and now I'm not sure, after this morning,
but it sure makes me concerned if we have to add
another 20 percent or something like that, to
account for alignment error. That just doesn't
ring right with what I've seen before.

But it just seems to me that right here
is basically a reporting done with 95 percent
confidence that the value you're reporting to the
California Energy Commission is equal to or below that.

DR. HAWLEY: Agreed, but if you put those values out in front of the consumer, sometimes he's going to be selecting a tire that he thinks has a lower average rolling resistance, and getting a tire that actually has a higher average rolling resistance.

MR. MEIER: You mean, so people want tires with higher rolling resistance?

DR. HAWLEY: No, --

MR. MEIER: Well, yeah, but I guess what happens is, I mean there's an incentive for the manufacturers to reduce that certainly so they get much closer to the actual value. But, --

DR. HAWLEY: And, if the variability and width of the error bars was consistent across all the products, then what you're suggesting would work just fine. But it to be essentially the same in terms of the order of the tested tires, it would be the same whether you ranked them on the basis of the average or on the basis of the 95 percent --

MR. MEIER: I just think it's been --

that creates greater incentive for the
manufacturer to reduce the product --

DR. HAWLEY: I understand.

MR. MEIER: -- product variation. But I just wanted to present that as here's an alternative way to report the data. It's been done.

We've got one more little addition, we have to worry about the alignment, which I don't know what that increment for the alignment would be. But it's there. It's completely set.

And we also know how to verify it. Somebody, a test lab can come in, test the tires, and they can find for a sample of ten tires what the variation is, and what the 95 percent confidence level is.

And so there's a symmetry, and they can easily verify that there is accurate reporting.

MR. TUVELL: Not for you, Mark.

(Laughter.)

MR. TUVELL: Ray Tuvell, again. I think that one of the things that you're hearing from us, and it's a core perspective that I would like to make sure you understand.

As things have evolved now, we're seeing a lot more of what we're trying to accomplish here
in the direction of value for the program that we're putting together, as similar to what's happening on the OE side of your business.

Where it seems to be, in seeing a great deal of consistency with what we're seeing as. gosh, this stuff is important. They mandate the testing. They've come up with a sample size. They've figured out a method that reduces to one number.

And you guys have been living with that for quite some time, you're used to it. You know what it is. It works.

And so we see that, too. And we see a great deal more of value what that yields as opposed to the comparisons that we heard consistently from the industry about oh, no, the better way to compare what you need to do here is the UTQG system that NHTSA runs.

It's important for you to understand that we don't see that, and never saw that as the model we wanted to build a program after. And my friends from NHTSA here understand when I say this, it's no criticism of them. Because they've been very candid and forthcoming with me about concerns about the program, themselves.
And we never saw that as a good model to build off of, for many many reasons. And you touched on a few of those in your presentation. And, by the way, just to clarify a few things about that. And I'd suggest, if you get a chance, you might want to take a look at this independently.

On the UTQG there is extremely limited amount of independent verification done by NHTSA. Due to just what you would expect, limitations in funding for government agencies to run that side of their programs.

So, to suggest that that is a good model because look how well it has worked in the past, and look at all this great independent testing that's going on, and they've done this verification and they haven't found these problems, I've looked at that in detail and I understand it in detail. I would encourage you to look at it in detail. I would think you'll find, if you didn't already know, there's not much there.

And so we know that, and we understand that as another limitation of those types of programs. In fact, does shift a heck of a lot of
burden to the government. And if the government
is not in a position to pick up that burden, it
doesn't work.

By the way, I was extremely encouraged
about the comment, what I thought I heard you say, Mike, about you see the value in changing the UTQG
system so that derating is not allowed. And I
would love to see the industry take that statement
publicly, and that you would endorse and support
NHTSA changing that, the UTQG program, so that
derating is not allowed.

I think that's a huge step in the right
direction. And it would be a great thing for the
industry to step forward and we're behind it,
we'll support NHTSA do it. It's a problem for us,
do it, NHTSA, we'll support you.

So I'd love to see you folks follow
through on that. You obviously see the
shortcomings. Follow through. Support them in
making that change.

MR. ROBINSON: I'll make one point.

Again, Tim Robinson from Bridgestone.

Ray, we understand all your concerns,
but let's not lose sight of the prize here. I
mean the whole objective is to reduce rolling
resistance and improve fuel efficiency for the
state of California, and obviously for the whole
world.

We think we can do this, the RMA's
position is we think we can do this for the lowest
cost through self-certification. And have as much
accuracy as we would by testing and reporting on
almost every single tire. Much less cost.

So, the RMA position, we feel that we
can do this. We can achieve all of our goals. In
addition to that, improved tires by reducing fuel
efficiency and create competition within the
marketplace to eventually force more tires from
the three or four star categories into the five.

And then maybe later on shift the scale,
whatever, to make the 5s a little lower or
whatever, or add a sixth star or seventh star, or
whatever.

So we think we can do that through self-
certification. Thanks.

MR. PETERSEN: This is Gene Petersen
with --

MR. SPEAKER: Microphone.

MR. PETERSEN: This is Gene Petersen
with Consumer Reports. I just had a couple
middle-of-the-road questions for anyone to answer.

First, the alignment costs. I know it's a proposal, but did you make any attempt to analyze what that would cost?

MR. WISCHHUSEN: I didn't participate in the committee; I'm looking for Dan, who did. But I think there was some discussion about the cost of the alignment procedure.

MR. GUINEY: Acquisition, obviously acquisition costs of the alignment tires; delivery cost of the alignment tires was considered. As well as just the testing of the alignment tires.

So you could use those three categories, tire cost, delivery and testing cost of the alignment tires. Analysis. Like somebody said, computers.

MR. PETERSEN: I just had a comment that a number of SKUs report. I was wondering if that was under-estimating what might be available. Because I was thinking back that, you know, each time an existing model, components may change, change the suppliers, or change of plan, different techniques in building it would require going back and retesting them.

MR. WISCHHUSEN: Maybe I misunderstood
your question. I thought you were asking if that
number of SKUs we used, which was 24,000, if that
really under-estimated what was actually out
there.

        MR. PETERSEN: That's correct, that's my
point.

        MR. WISCHHUSEN: That may very well be
the case. I think when the industry went through
its version of how many SKUs do we have, it was
how many active SKUs did we have.

        MR. PETERSEN: Okay.

        MR. WISCHHUSEN: Now, it's an
administrative procedure to me to say this SKU is
now inactive. But there may still be thousands of
them out in the marketplace, in dealers'
 inventories, waiting to be sold.

        So the population of SKUs may be a
little bit more than the number that we consider
active SKUs. So there probably are more tires out
there than what that number shows.

        MR. PETERSEN: Okay. And then listening
to the challenge that Ray was talking about, in
going through this
modeling thing and so forth.

        Ray, I was just wondering, do you really
know, do you really need to know where the number came from? For instance, if they just gave you a number and if they're tied down to the penalty of a self-certification process, wouldn't that be sufficient?

MR. TUVELL: Yeah, understand the number issue in this context for us, okay. I'm looking at the underlying credibility of the program, as a whole, okay.

What's the basis for it? What is this program built on? So that ultimately if any consumer, or you know, you at Consumer Reports, want to go back through the details and say, I want to see, what is underlying this. I want to know if I can develop independent confidence in this program as a whole. Let's say it ended up being a five star program. That you could dig down and find it.

So far, right now, the only basis we have determined to develop a level of confidence in determining, assessing the energy efficiency of a tire is the testing. Either J1269 or 28580. We know of no other basis for doing that. It yields a number.

It's a number that has been used
commonly in this -- it's used by OEs day-in and
day-out. And apparently it works. And it works
to the hundredth, because those numbers are
commonly out there to the hundredth.

And so we looked at it and said,
fantastic. Fantastic. In fact, they're making it
better with 28580 by coming up with a machine-to-
machine alignment process. So now we can compare
numbers from machine to machine.

So we look at that and we go, these
numbers provide the underlying basis for the
program, as a whole. Anybody can check it and
say, okay, I got some confidence here. I've got
some confidence here.

And I have yet to see come forward some
other basis or a proposal for a basis that could
yield anywhere close to that level of confidence.
Without that confidence these government programs
are meaningless. They're meaningless.

And unfortunately, I think, it's also
part of the reason why it's one of the
shortcomings of UTQG. And there's many reasons.
I mean once I understood in depth how the UTQG
numbers were determined, and it's part of a self-
certification, the minimum part is the testing.
It's just kind of like I don't have any confidence in it, either.

MR. PETERSEN: Here's the question. Do you see the state of California being very active in doing auditing?

MR. TUVELL: Absolutely. Absolutely. I can -- budget is simply not a problem for me on that issue. This is a very important program to the state of California. I don't have problems getting money for this program. I can put together a very aggressive auditing program and fund it.

And one other point on the testing costs and stuff like that that I wanted people to keep in mind. Hey, look, if it's going to cost you a lot to run the test, I have people who will run the test for me pretty darn cheap. I'd suggest you use them.

The analysis we did and presented at our February 5 workshop was simply testing capacity of the industry. We did not include independent testing capacity. I mean I have a sense what they are out there. I know exactly what they cost because that's what they charged me.

If it ends up being as expensive for you
guys as you represented up here, I would want to make a suggestion. Stay out of the business. Go to the independents. You're going to save a heck of a lot of money getting your testing done. They do a very good job, by the way. And they're quick, and I can depend on their price structure. You'll save a lot of money.

MR. WISCHHUSEN: All right, I finished my presentation a long time ago.

(Laughter.)

MR. WISCHHUSEN: If there are no more questions -- Julie?

MS. ABRAHAM: One quick question on --

THE REPORTER: Could you come to the microphone, please.

MS. ABRAHAM: Sorry. This is Julie Abraham from NHTSA. Mike, just a very quick question. The number that you reported, the cost numbers that you reported, you said that's a testing cost. Is that testing and recording, or just simply testing every single --

MR. WISCHHUSEN: It was testing. We didn't add a separate number for reporting, but --

MS. ABRAHAM: Is there a cost associated with reporting the data to the government? And,
if so, what is that cost?

MR. WISCHHUSEN: There will be some IT type overhead costs. You know, you're going -- if you don't have server capacity to do the information transfer.

I'm thinking back to early warning. Now, this is nowhere near the magnitude of early warning, but you have that sort of infrastructure requirements which I suspect everybody is probably pretty well set for. You may have some software development costs upfront, and then maybe a small ongoing maintenance cost for it.

My gut feels it's small compared to like the hardware costs and the personnel costs of staffing the test machine.

MS. ABRAHAM: But you pretty much you guys would keep a record somewhere in your company of what every tire would -- and some spreadsheet form of --

MR. WISCHHUSEN: Yeah, I would --

MS. ABRAHAM: Regardless of whether it's tested or modeled or what-have-you, you would have a --

MR. WISCHHUSEN: I would suggest --

MS. ABRAHAM: -- record of that --
MR. WISCHHUSEN: I would suspect or I would anticipate that data retention would be part of the regulation. I mean we'd be told how long we had to keep the information.

You know, we, internally, have our own data retention policies, but they are overridden by regulatory requirements.

MS. ABRAHAM: Okay. But I guess what I'm asking is not just simply whatever rating it is, but you would keep the actual numbers, whether it's RRC or RRF or, you know, whatever it is. You would have that somewhere in your record?

MR. WISCHHUSEN: Now that may differ if you did it by -- if you actually ran the test. If you actually ran the test, yes, you got the test results.

If you do modeling to interpolate the number, you've probably got some sort of a report coming out of that finite element analysis, but --

MS. ABRAHAM: Um-hum, but some --

MR. WISCHHUSEN: -- I suspect, I suspect somewhere there --

MS. ABRAHAM: -- number --

MR. WISCHHUSEN: -- would be something that would say this is why we gave it this value.
MS. ABRAHAM: Okay. Thanks.

MR. GUINEY: Dan Guiney, Yokohama. Ray, if I understood the basis for the foundation for wanting to dig deeper and understand the underlying foundation of everything that's done, I guess the question I would have, do you have a sense of how many consumers in the state of California that are buying tires for a vehicle would ever do that?

MR. TUVELL: Go down to that level of detail? Yeah, I talked to John Rastegger (phonetic) at TireRack a lot about this stuff. I don't know if you folks deal with the TireRack. I mean one of those reputable groups out there. And he readily admits that his consumers are a different breed of folks. He and I think it's a relatively small percentage, definitely less than 10 percent, probably less than 5 percent that would actually dig deep to look at the data. Okay. That's my sense, too.

MR. GUINEY: And then the underlying foundation of the data. You mentioned we got to go all the way to the underlying foundation --

MR. TUVELL: Yeah, yeah, here's what I meant by that. The initial question in my mind
that the vast majority of consumers, and I think
Gene said that, and we've heard this over and over
again from retailers, the vast majority of
consumers do little or no research on tires.

You weren't at the November
presentation, the roundtable. We talked a lot
about the stress purchases. They come in, I need
a tire, I need it now, get me out of here quick.
That's it.

And so without a doubt we need to come
up with a rating system that works in that
environment better than any other. Okay. Better
than any other if we're going to be successful,
because that's how the vast majority of products
are sold, we think, here.

But understand, see, that's different
than what underlies the program. I got to be
able, ultimately when I give that information to,
you know, that soccer mom who needs her tires, she
needs to understand there's a level of confidence
behind it.

No different than, here's an example
I've used time and time again. Any time you go
out to buy a food product you will see a nutrition
label on there, okay. Now, you may or may not
to get like this.m
I have a level of confidence in that
information because there's a government program
behind it that specifies exactly how the testing
was done, exactly how you can report that
information. It has a confidence behind it.
And that's what we need to establish for
this program. A level of confidence behind it for
anybody who wants to trace it back to its source.

MR. GUINEY: Correct me if I'm wrong, so
the confidence building is for the government
agency, not for the end user.

MR. TUVELL: It's for everybody. I
mean, we're not -- there's no way I'm going to be
able to go to our Commissioners here and say,
willing to develop a program, by the way, and it's
based on data where we're just kind of accepting
information because people say, here, take our
word for it. They'll throw me out in a second.

MR. WISCHHUSEN: Yeah, I understand.

MR. TUVELL: Okay. It's for the
sanctity of the program as a whole. It's for
everybody involved. It's for us that are running
it. It's for the public that's trying to use it. It's for the retailers that are using it to sell. It's for you guys to advertise your product. Think of it, I mean this is one way I always kind of looked at this, man, I can make your life so simple. I'm going to get all this great data on every Michelin tire made, Dan. Now you know exactly what your competition is like. You don't have to do any testing, yourself. You just market your tires.

Now you can go out to the public and say, we've looked at the data. Here, you can look at it. Our tires are better than Michelin. Wham, bam.

MR. SPEAKER: Save you money, too.

MR. TUVELL: And I know I'm going to save Gene money because he's not going to have to do any rolling resistance testing anymore. He's going to love me. Okay.

So, I look at this also as something that, we're a whole advantage to the industry. You got reliable data you can use in your advertising, and make claims about your products. I mean I'm just going to win/win.

Is there a cost associated with it?
Yes. Are there logistics associated with it?

Yes. Okay.

We're not as bothered by that side of it, because we're used to doing that. We do it with all energy efficiency products. But we appreciate and understand the impact on this industry, and that's why we're trying to nail this down in some specifics. That's why I paid Smithers to do the analysis, to come up with some reputable numbers that I can use to get a grasp of it.

MR. GUINEY: So the confidence we have with our proposal has to be transmitted to you --

MR. TUVELL: Well, I --

MR. GUINEY: -- as the agency?

MR. TUVELL: Well, what I've tried to explain, Dan, is where I have concerns about the proposals that I'm hearing from the industry. But, also, understand, I've never, and still today I couldn't tell you exactly what the detail proposal of the industry is.

I'll give you a perfect example. Maybe this is a -- and if you don't want to answer this, don't.

Is the industry committed to ISO 28580
as the test protocol for this program?

See, I've never heard the industry step forward and say, ISO 28580, we're happy, get it off the board, let's go. Next issue.

MR. GUINEY: I think in the one workshop I was in that we discussed that, we said that we believe we understand the transition between the two, and we don't see a problem. I believe that's what we said.

MR. TUVELL: Okay, no, I heard it that way. But, see, that's not as clear as saying the industry accepts ISO 28580 as the official test protocol for the Energy Commission program and the NHTSA program. Done issue, guys, let's focus on the real issues. See, it's --

MR. GUINEY: That's another note we'll take --

MR. TUVELL: Yeah, see, I mean I would love to get a clear understanding of where the industry is coming from on each one of these issues today. Because I couldn't tell you right out, what is the industry proposal. I couldn't tell you.

I mean I'm getting little pieces every now and then, but I still don't know what it is.
I still don't know what it is.

So, yes, as you put it, am I lacking in confidence, yeah, I don't understand. How can I be confident? I don't get it yet.

MS. NORBERG: Maybe just because I think it's 5:18, and maybe if we can kind of wrap up in a way that I think we understand and hear your needs. And maybe we can take all of this good discussion and discuss among our members how we can try to provide you with the clear explanation, I guess, of the proposal.

I thought we kind of got through that today, but we can take another stab at it during the comment period and submit our comments for the record to try and clarify so that everyone understands where we are -- where we stand, as an industry, on test methods on the RMA proposal.

And we can discuss internally the conversation that we've had just now, and how we can be responsive to I think what we're hearing. If it's helpful, we can do that and get back with you during the comment period.

MR. TUVELL: I really appreciate that.

And, throughout the presentations today I've made numerous requests for -- more specific requests,
you know, for data and breakdowns and that sort of stuff, you know, that frankly is complicating things for us.

It's dragging on. We're not getting the level of specificity we need. We're pretty much getting to the point where we're concluding it is not going to be forthcoming, you know, you expecting it any more, time to move on.

MS. NORBERG: Yeah, I'm sorry, you may have missed what I said after the break, but now that we've heard all the input on the data analysis and Mark Hawley's presentation, that we will be adding that data report and providing a data report on the underlying data at the end of the comment period from this workshop.

I'm sorry, you may have been out of the room when I stated that here. But that's definitely our plan, and I'm sorry if others didn't hear about it, but that's definitely our plan.

MR. TUVELL: Yeah.

MS. NORBERG: And I did state that before --

MR. TUVELL: And I really appreciated that. And just as on, you know, that outstanding
list of information requests that our
Commissioners submitted, you know, that's still
all very important to us.

MS. NORBERG: Well, I think it's, for
use, just kind of closing by that list. For those
who haven't seen the list, the items on the list
are the data, which I think we've covered in
detail today. And, as I said about a minute ago,
we will be providing the full list of data and the
report during the comment period, taking into
account all of the discussion and additional
considerations that we heard today.

So that -- the second item -- I mean the
first item. The second item was a whitepaper on
self-certification that we provided you back in
June 2008. And we've spent, I think, a lot of
time this afternoon going through self-
certification in more detail. If there's more
that we need to provide on self-certification
we'll talk about that internally in our group and
see what more we can provide.

The fourth request was about testing
capacity. Mike just gave a lot of information
about testing capacity here today. We've heard
your concerns and we'll go back and see what more
we can do to give you more detail.

I think the challenge with the request to provide the testing capacity data as requested, but as Mike explained, the issue is not as simple as that.

And so what we've tried to do in the presentation that Mike went through was to give our best assessment of how we would do that in a way that make sense, given the industry's testing situation -- so then we can take all the discussion that we've heard today and see what more we can provide.

MR. TUVELL: But, on the testing capacity, see our request that has been outstanding, It's very simple. Name of company, number of test machines, location.

MS. NORBERG: Yeah, I understand that. The request was simple, but the answer isn't that simple. And so, I mean -- honestly trying to fulfill that request is impossible how it's written. So we're trying to be responsive in a way that is possible. And we will talk internally to see what more we could give you on --

MR. TUVELL: Okay.

MS. NORBERG: -- and, you know, provide
MR. TUVELL: Right, and then so I would encourage you to look at that entire list of requests, because it is more detailed and it is very specific. And, as you're restating them now, no, they haven't been forthcoming. And it's still out there. And there are people who want it and are wondering why it's not forthcoming.

MS. NORBERG: As I've gone through, I think we've addressed all four. And what I provided, and we can submit additional material during the comment period, and --

MR. TUVELL: Okay, but look, --

MS. NORBERG: -- and we can see where we are.

MR. TUVELL: Okay, but --

MR. SPEAKER: California sales --

MS. NORBERG: I'm sorry? California sales, right. And that's just not information that exists, so --

MR. TUVELL: It's not California sales. I can put up the list if you want. But, Tracey, I just -- I don't want to -- I hate belaboring this point, but no, we do not believe you're in any way compliant with that request. So, please, don't
imply that, yes, you have supplied all that
information and everything is fine.

It is not, okay. And until we get it
and tell you, yes, thank you, you've satisfied our
needs, you haven't.

MS. NORBERG: Okay, maybe I can restate
what I just said. We will provide the data by the
end of the comment period along with the analysis
of that data where Mark provided the summary
today.

Number two, we've gone through the SKUs
and we've addressed those. We think the Smithers'
estimates are accurate.

Number three, the whitepaper -- I'm
sorry if you don't have a copy of what we provided
you --

MR. TUVELL: I have.

MS. NORBERG: -- in June. We --

MR. TUVELL: I have the whitepaper.

MS. NORBERG: -- completely submitted

that again.

And number four, the testing
availability. We've tried to be responsive in the
way that it's possible, given the industry's
configuration. We will go back and discuss that
further to see what additional information we may be able to provide, and provide that during the comment period.

And so, just to be clear, I'm not saying that now we have completed the request. I'm saying that I've answered each point today, and that we will look forward during the comment period to be further responsive.

Is that clear?

MR. TUVELL: Yes, that's helpful.

MS. NORBERG: Okay, great. Thank you.

And thank you, everyone else, for all the time today. It was kind of a marathon session, but thank you all very much.

(Whereupon, at 5:25 p.m., the staff workshop was adjourned.)

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CERTIFICATE OF REPORTER

I, PETER PETTY, an Electronic Reporter, do hereby certify that I am a disinterested person herein; that I recorded the foregoing California Energy Commission Staff Workshop; that it was thereafter transcribed into typewriting.

I further certify that I am not of counsel or attorney for any of the parties to said workshop, nor in any way interested in outcome of said workshop.

IN WITNESS WHEREOF, I have hereunto set my hand this 1st day of May, 2009.

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