

RETI

PACT, PLANMASTER &  
MULTI-STAKEHOLDER DECISION SUPPORT

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May 21, 2008

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# PlanMaster / PACT History

## SCE Research & Development:

- > Environmental decision support model (1993-1995)
- > Multi-stakeholder Hydro Relicensing Research & FERC ALP (1996-present)
- > Substation siting models (1996-2002)
- > Corridor models (2000)
- > Transmission line evaluation models (1999-2005)
- > Website model prototypes (2001-2005)
- > **CEC / SCE / Facet funded PACT project (2006-present)**

# Other PlanMaster Examples

- > **Monterey County GPU**
- > **Sacramento Waste Water Long Range Plan**
- > **Town of Mammoth Lakes GPU**
- > **City of Ontario GPU**
- > **County of Gwinnett, Georgia Comp Plan**
- > **Nevada County GPU & MSR**s
- > **Long Range Transportation Plan Website – TransLink/GVTA**
- > **Big Creek Alternative Licensing Process – SCE**
- > **Maine DOT – Corridor plan**

# PlanMaster / PACT Key Elements

- > **Web-based**
- > **Refined iteratively as information becomes available**
- > **Interactive model definition, exploration & decision support**
- > **Interactive scenario definition/evaluation**
- > **Technically rigorous– easy to audit**
- > **Multiple decision factors – easily extended**
- > **Correlation, sensitivity & trade-off analysis – supports calibration, testing, decision-making, & negotiation**
- > **Multiple stakeholder Points of View**

# PlanMaster and PACT approach

## Don't:

- > Automate decision making
- > Optimize – choose a “Best” solution
- > Allow a “Black Box” to hide information
- > Represent a single stakeholder's view

## Do:

- > Clearly show potential impacts of choices
- > Compare several solutions
- > Provide in-depth audit of data, assumptions, and model calculations
- > Represent any number of stakeholder views

# Similar Applications

	PACT	RETI T-line	RETI CREZ	Siting SCE	Ontario GPU	Trans- Link	Gwinnett Plan	Monterey GPU	Maine Corridor	Snake River
Spatial Models										
Land Use	○	○	○	○	○	○	○	○	○	
Facility Siting			○	○	○	○				
Corridor Selection	○	○								
Network Models										
Road Network						○	○		○	
River Network										○
T-line segments	○	○								
T-line routes	○	○								
Decision Models										
Impact models	○	○	○	○	○	○	○	○	○	○
Scoring systems	○	○	○	○	○	○	○	○	○	○
Stakeholder Models	○	○	○	○		○			○	○
Internet Tools										
Web Models	○	○		○				○		○

### Step 2: COMPARE

Default 1

Default 2

Apply

### Step 3: VIEW

SELECT EDIT

- Measures
  - + Analysis
    - Browse Decision Factors
      - Community
        - Land Use
          - Farmlands
          - Hospitals
          - Land Use
    - + EMF
  - + Biological
  - + Engineering

VIEW AS CHART

VIEW AS TABLE

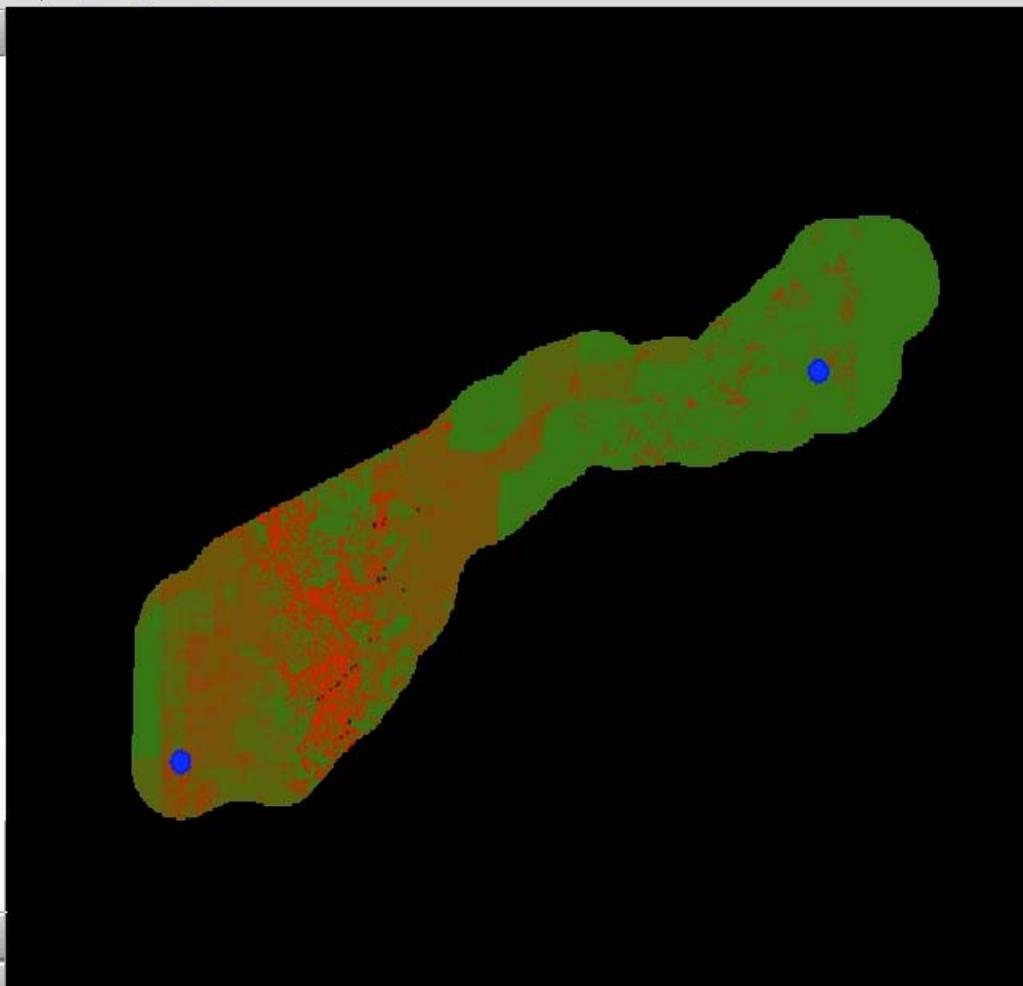
VIEW AS MAP

VIEW DOCS

Zoom View Options

#### Legend

- Project Area
  - Project Area
- Themes
  - Cover Type Vegetation Priority Protection
    - 0
    - 0.1 to 0.2
    - 0.3 to 0.4
    - 0.5
    - 0.6 to 0.7
    - 0.8 to 0.9
    - 1
    - Greater than 1
- Community
  - Land Use
  - EMF
- Biological
- Engineering



Selection

Overview Map

### Step 2: COMPARE

Default 1

Default 2

Apply

### Step 3: VIEW

SELECT EDIT

- Measures
  - + Analysis
    - Browse Decision Factors
      - Community
        - Land Use
          - Farmlands
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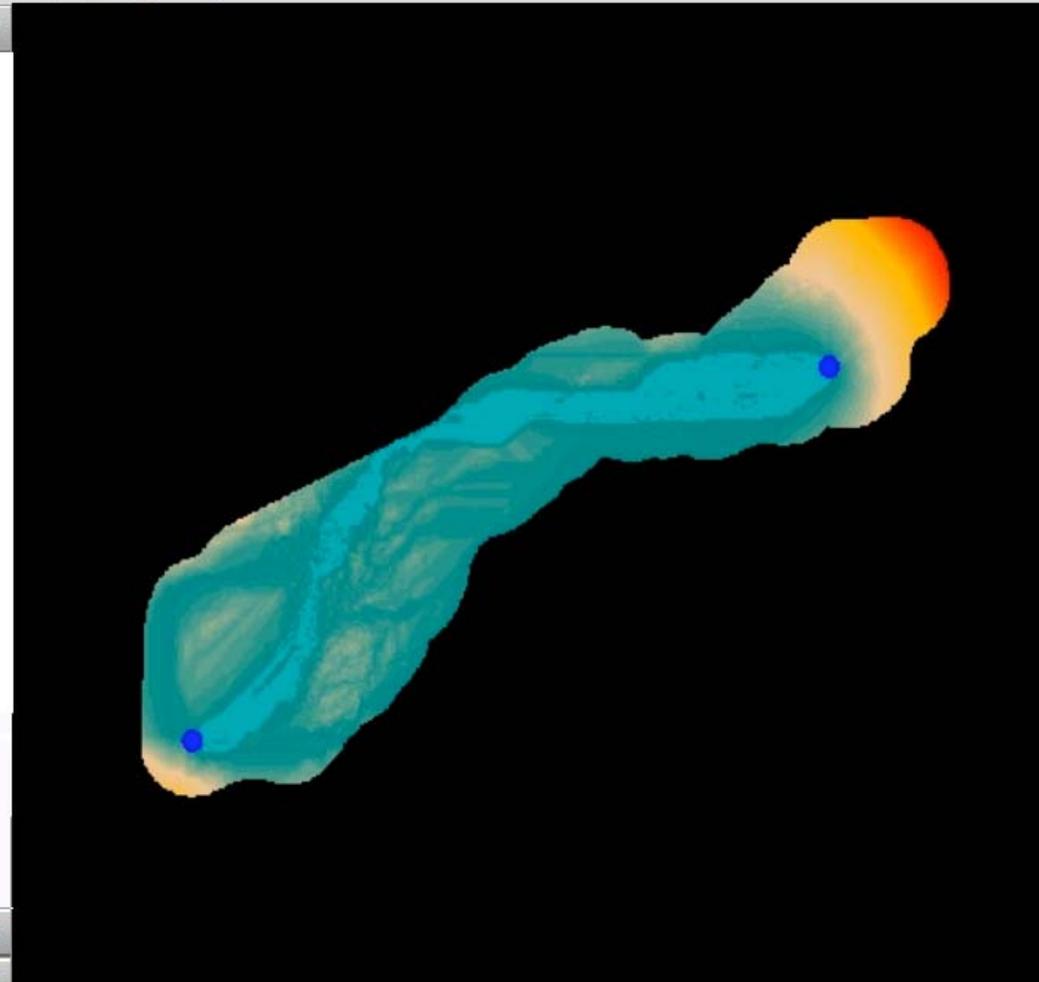
VIEW AS TABLE

VIEW AS MAP

VIEW DOCS

Zoom View Options

- #### Legend
- Corridor
  - Project Area
    - Project Area
  - Themes
  - Community
  - Biological
    - Species
      - Aquatic Refuge
      - Wilderness Areas
      - Vegetation Cover Type
        - Chamise
        - HighDesertMixedShrub
        - MountainSagebrushAlliance
        - BlueOak
        - MontaneMixedChaparral
        - MixedRiparianHardwoods
        - MountainHemlock
        - WetMeadows (Grass/Sedge/Rush)
        - Unknown
      - Owl Habitat
    - Hydrology
    - Engineering



Selection

Overview Map

### Step 2: COMPARE

Default 1

Default 2

Apply

### Step 3: VIEW

SELECT EDIT

- Measures
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      - Community
        - Land Use
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VIEW AS CHART

VIEW AS TABLE

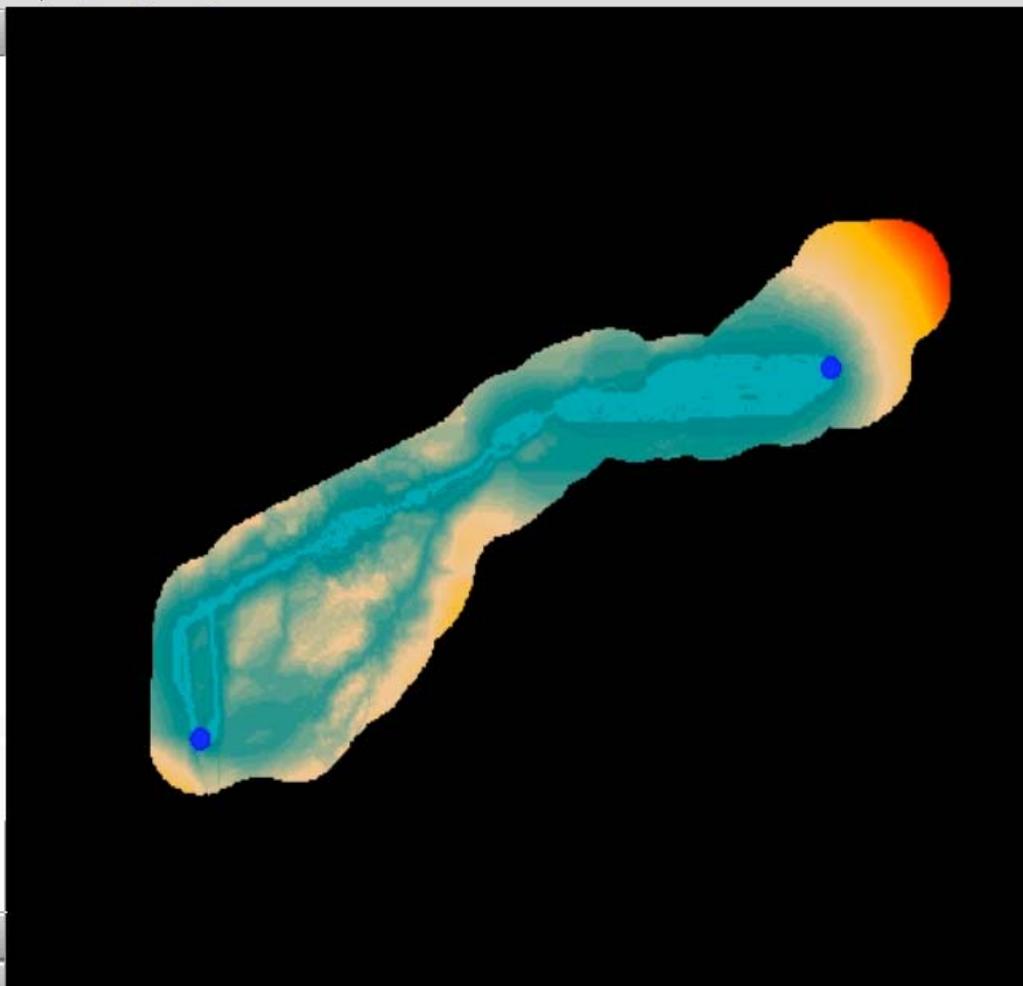
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Selection

Overview Map

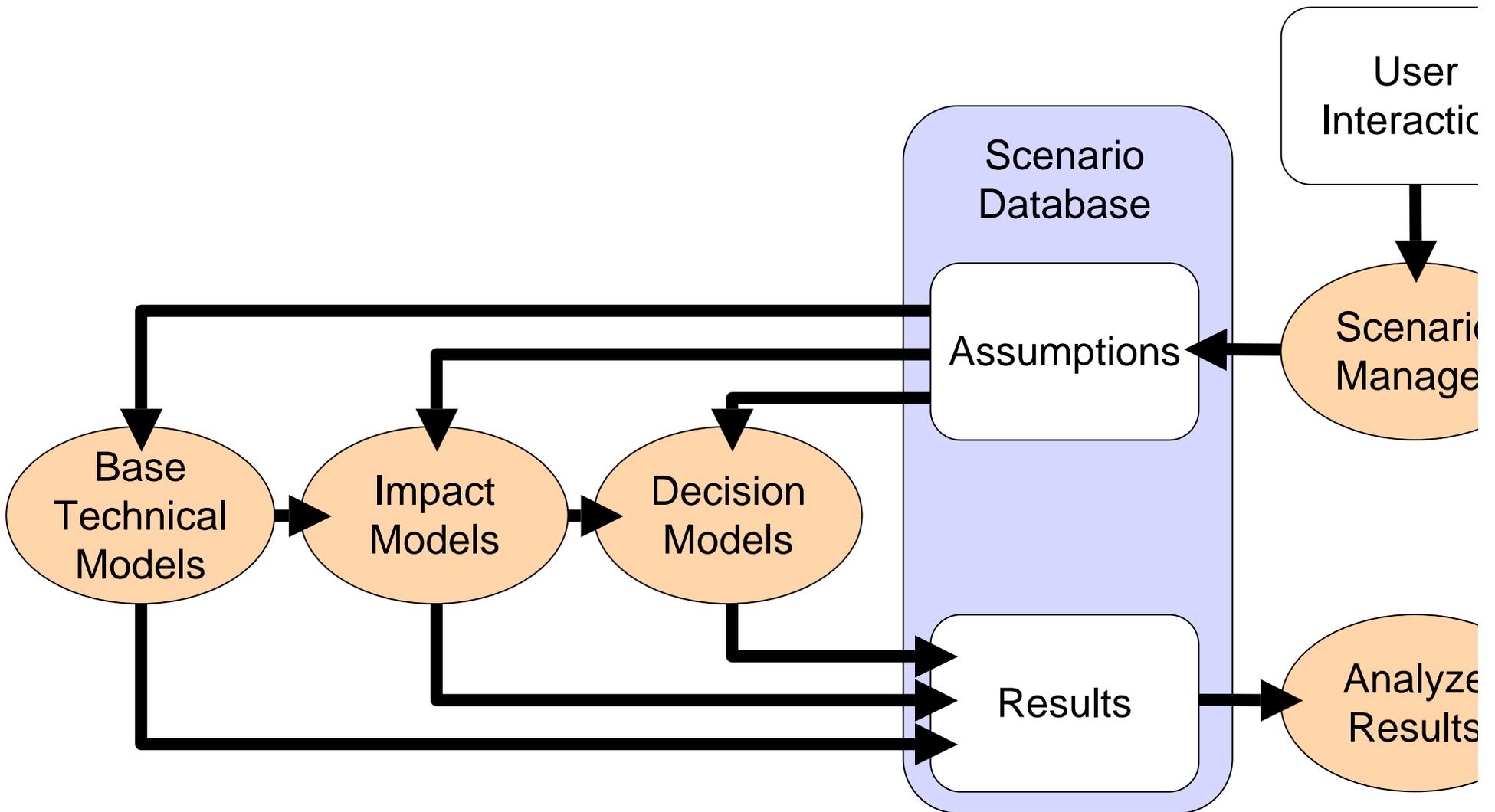
# Decision Models:

**Indicator scoring**

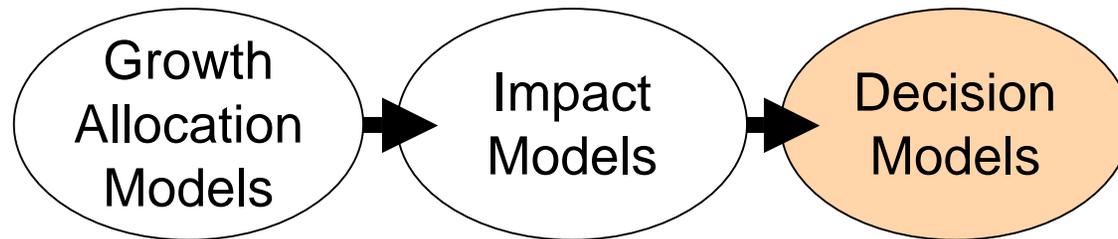
**Combining scores**

**Multi-stakeholder**

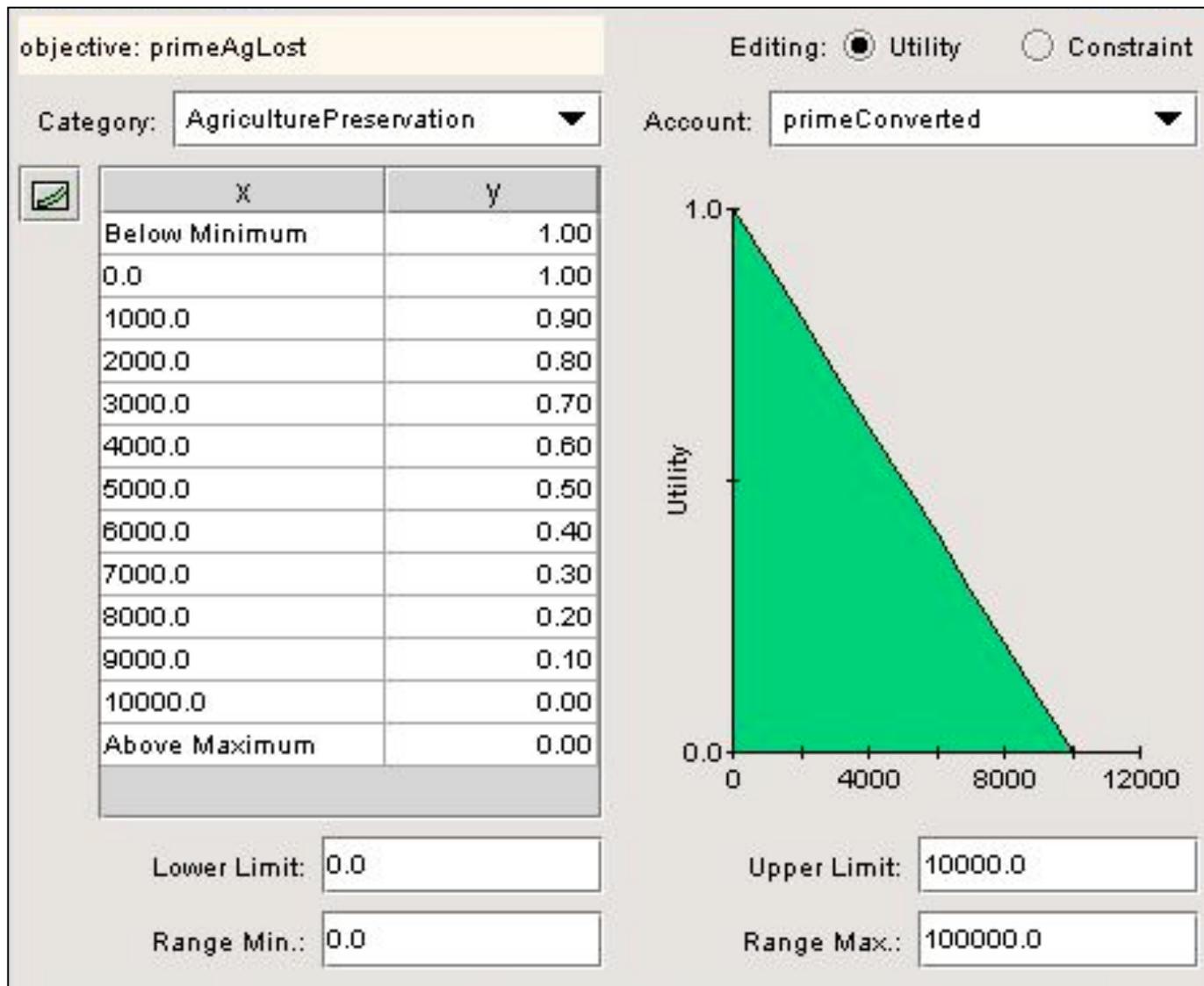
# How PlanMaster Works



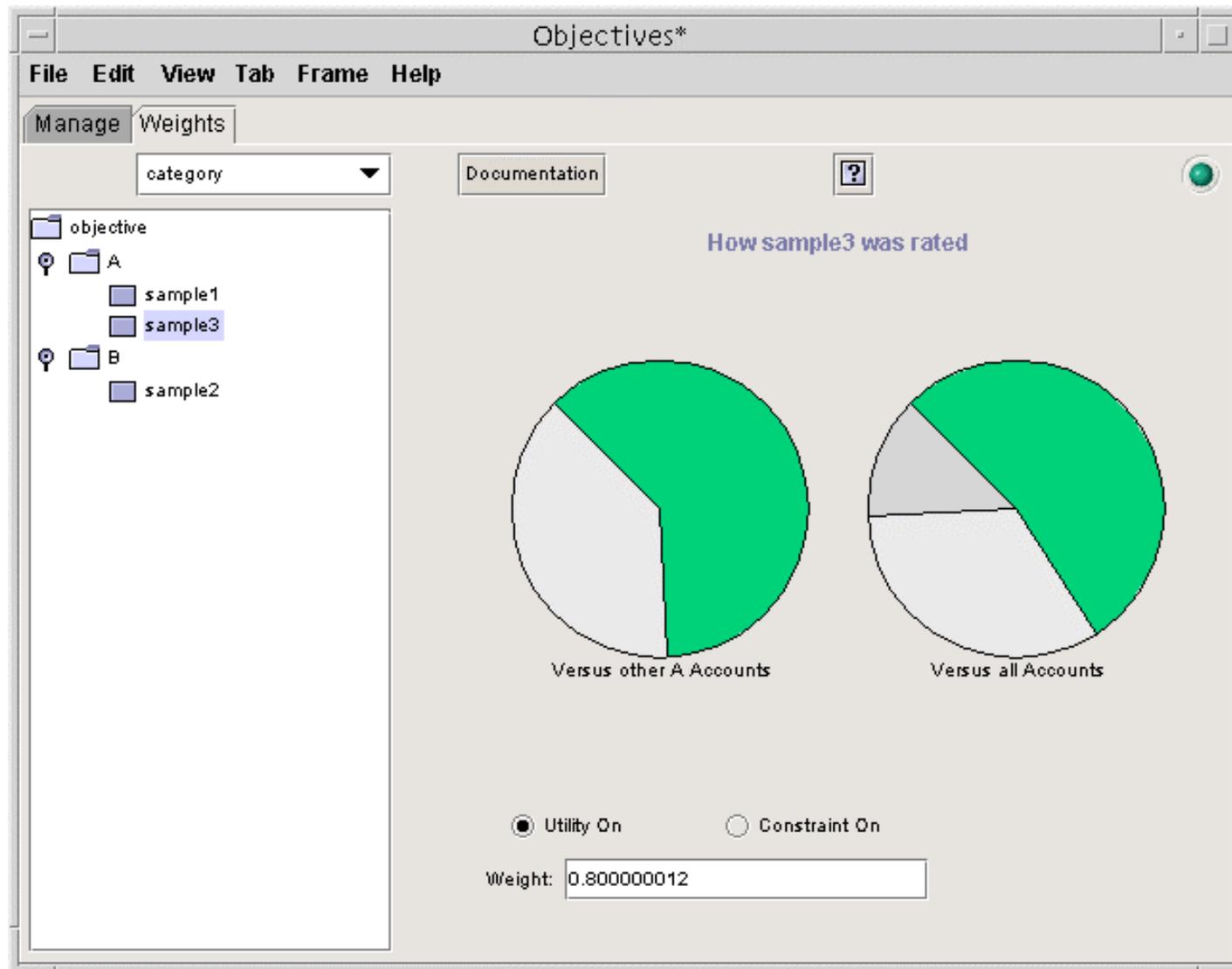
# PlanMaster Decision Models



# Performance Measurement



# Indicator Weighting





# Indicator Summaries

## Town of Mammoth Lakes, CA

Indicator  
Categories



### Getting Started

### Community

Community Character

Affordable Housing

Recreation & Culture

### Environment

Air Quality

Open Space

Environmental Sustainability

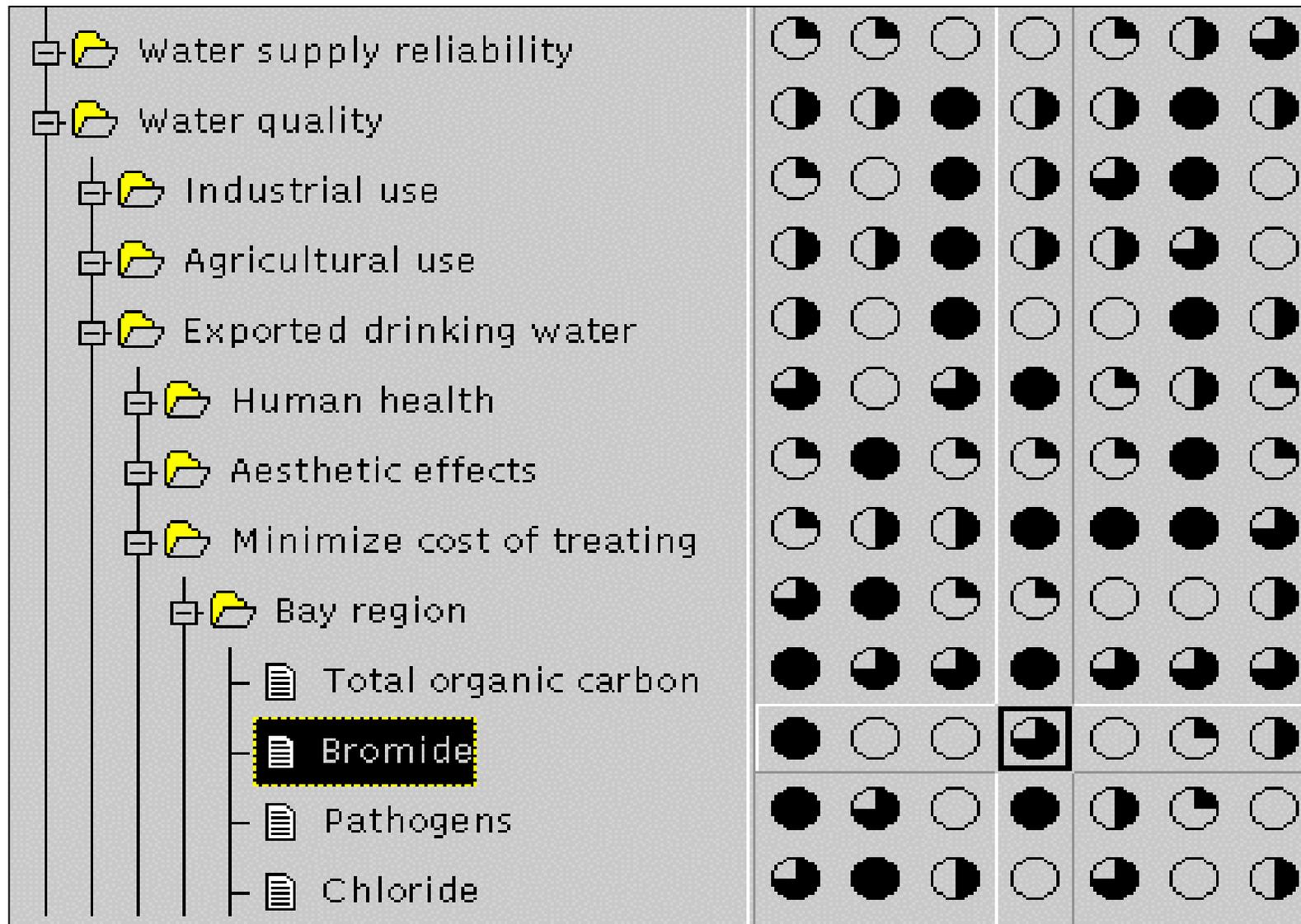
### Scenario Scores

1 5



Relative  
Scores

# Multiple Stakeholder Analysis – CalFed CA



# Handling missing data

- > **Use available data & elicit expert judgment to fill initial gaps**
- > **Do a first scan of alternatives to:**
  - » Screen out unrealistic options
  - » Identify the key decision factors
  - » Understand stakeholder sensitivities
- > **Then:**
  - » Identify critical data gaps
  - » Fill with enough data to allow alternatives to be compared
- > **Result:**
  - » Well-founded decision
  - » Quick process
  - » Lower cost because irrelevant data are not collected

# **PACT**

## **Demonstration:**

### **I80 Test Case – Route & Segment Evaluation**

# **PlanMaster**

## **Project Example:**

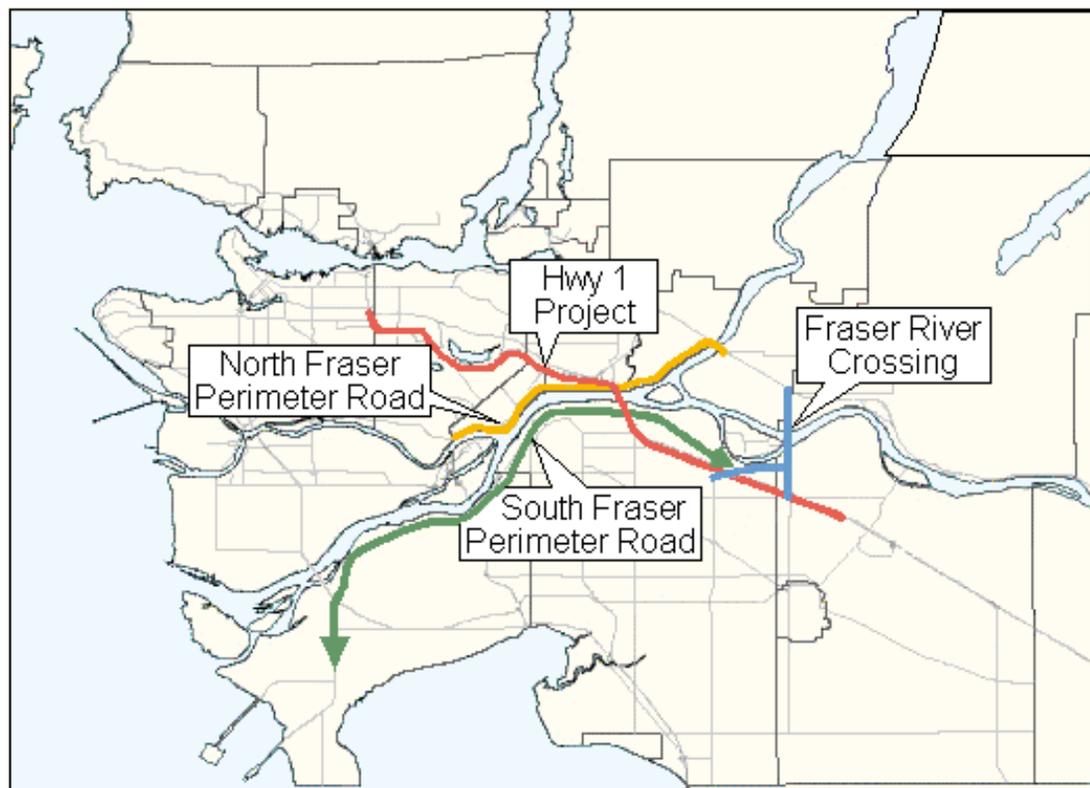
### **TransLink – Multimodal transportation plan**

# Road Improvements

What improvements could we make to major roads in the GVRD? This page explains possible road projects currently being considered by TransLink and the Province. Each project has a cost, so watch your budget as you make selections!

## Road Improvement Projects

Major road improvement projects currently being examined for possible implementation over the next 5 to 10 years.



- ▶ Getting Started
- ▶ **Road Improvements**
- ▶ Rapid Transit
- ▶ Bus Transit
- ▶ Cycling
- ▶ Marine Transit
- ▶ Payment Options
- ▶ Send / Save Future

You are currently logged in as: **demo**

**You are editing the future:**  
EcoFriendly (FutureID: 106701)

- Selected Projects:**
- Fraser River Crossing
  - Network Improvement Projects

also assumed that the Fraser River Crossing will be paid for by tolls.

**Projects & Costs** *Uncheck the box to remove a project*

All Selected Projects:	Project Title	Annualized Costs	
	Highway 1 / Port Mann (provincial)	\$ 0.00 M	<input type="checkbox"/>
	South Fraser Perimeter Road (provincial)	\$ 0.00 M	<input type="checkbox"/>
	North Fraser Perimeter Road (provincial)	\$ 0.00 M	<input type="checkbox"/>
	Fraser River Crossing	\$ 0.00 M	<input type="checkbox"/> <i>Required</i>
	Network Improvement Projects	\$ 0.00 M	<input type="checkbox"/> <i>Required</i>
	Richmond/Airport/Vancouver Rapid Transit	\$ 47.00 M	<input checked="" type="checkbox"/>
	King George Highway and 104 Ave Rapid Bus	\$ 10.00 M	<input type="checkbox"/>
	<u>Broadway West Rapid Transit</u>	\$ 80.00 M	<input type="checkbox"/>
	<u>North East Sector Rapid Transit</u>	\$ 87.50 M	<input checked="" type="checkbox"/>
	<u>SkyTrain Service Improvement: 30 cars</u>	\$ 15.60 M	<input checked="" type="checkbox"/>
	Additional Train for West Coast Express	\$ 2.00 M	<input type="checkbox"/>
	Midday Service for West Coast Express	\$ 0.00 M	<input type="checkbox"/>
	<u>Buses: 1800 Buses</u>	\$ 147.70 M	<input checked="" type="checkbox"/>
	<u>HandyDART: 33% Growth</u>	\$ 19.60 M	<input checked="" type="checkbox"/>
	<u>Cycling: \$7 Million</u>	\$ 0.70 M	<input checked="" type="checkbox"/>
	Burrard Inlet Passenger Ferry Service	\$ 5.00 M	<input checked="" type="checkbox"/>
	Additional SeaBus	\$ 3.00 M	<input checked="" type="checkbox"/>

Projects Paid for by Tolls:	
Total Capital Costs for Remaining Projects =	\$ 4769.00 M
<b>Total 2013 Annualized Costs for Non-Tolled Projects, including Maintenance Costs (This is the amount covered annually by TransLink) =</b>	<b>\$ 326.10 M</b>
<b>Total Payment Selected (see Payment Strategy below) =</b>	<b>\$ -20.00 M</b>

- » Marine Transit
- » **Payment Options**
- » Send / Save Future

You are currently logged in as: **demo**  
 You are editing the future:  
 EcoFriendly (FutureID: 106701)

- Selected Projects:**
- Fraser River Crossing
  - Network Improvement Projects
  - Richmond/Airport/Vancouver Rapid Transit
  - North East Sector Rapid Transit
  - SkyTrain Service Improvement: 30 cars
  - Buses: 1800 Buses
  - HandyDART: 33% Growth
  - Cycling: \$7 Million
  - Burrard Inlet Passenger Ferry Service
  - Additional SeaBus

Total Capital Cost = \$4769.00 M  
**Total Annual Cost = \$326.10 M**

[Click to Log Out](#)

### Payment Strategy for TransLink

From the revenue options below, select a value from each source to cover the 2013 annualized costs for the transportation enhancements. Each step equals approximately \$20 M in revenue in 2013 and accounts for population increases.

Revenue Source		Total
<a href="#">Transit Fares</a>	current fare: \$2/1 zone	\$ -20 M
<a href="#">Fuel Tax</a>	current tax: \$0.115/litre	\$ 0 M
<a href="#">Parking Stall Fees</a>	current fee: \$0/stall per year	\$ 0 M
<a href="#">Parking Sales Tax (on commercial parking stalls)</a>	current tax: 7%	\$ 0 M
<a href="#">Vehicle Charge</a>	current charge: \$0/vehicle per year	\$ 0 M
<a href="#">Tolls</a>	current estimate: \$2/car	\$ 0 M
<a href="#">Property Tax</a>	current tax: \$89/household per year	\$ 0 M

**Your Payment Strategy must match the Annualized Costs within 5%**

**Total Annualized Costs** = **\$326.10 M**

**Total Payment Strategy Selected** = **\$ -20.00 M**

**Net** = **\$ -346.10 M**

Calculate Revenues

2003 Budgeted Operating Expenditures

Consider Alternate Revenue Possibilities

still better than most cars. \* Using less fuel reduces CO<sub>2</sub> emissions.

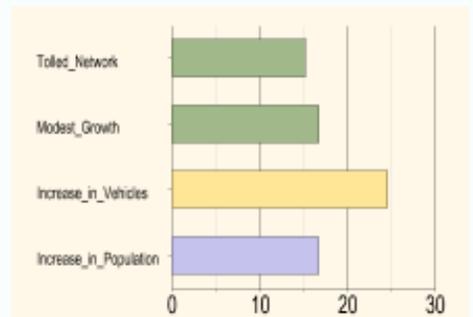
### Emissions to Our Air From Mobile Sources

#### Greenhouse Gases <sup>7</sup>

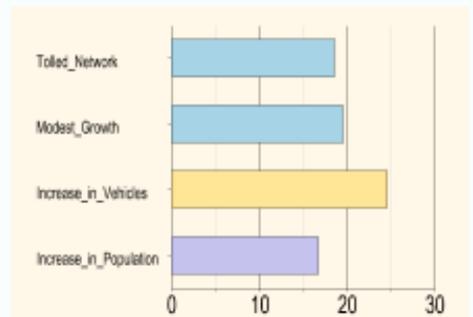
Change in CO<sub>2</sub> emissions from today (2003) to 2013. As the number of vehicle kilometres travelled increases in our region with the expected increase in population, so will the levels of greenhouse gases.

#### Air Particulates <sup>8</sup>

Change in PM10 particulates in our air from today (2003) to 2013. The number of vehicle kilometres travelled affects the air particulate levels. Changes in commuter choices and a reduction in short trips travelled by car will impact these levels.



Percent Change from 2003 to 2013



Percent Change from 2003 to 2013

#### Greenhouse Gases

- Increase in CO<sub>2</sub> Levels
- Increase in Vehicles
- Increase in Population

#### Air Particulates

- Increase in PM10 Levels
- Increase in Vehicles
- Increase in Population

#### selection boxes below:

Select a Future(1):

Tolled Network

Select a Future(2):

Modest Growth

Click to View

You are currently logged in as: **demo**

[Click to Log Out](#)

#### Let us know...

Are you worried about global warming?

Very worried

Now that you've looked at what transportation in the GVRD will look like in ten years, what

To view the results for your neighbourhood, please let us know where you live:

Enter the first 3 digits of your postal code:

V6K (Vancouver-Kitsilano)

Click to View

- Overall Performance
- Travel Time**
- Typical Trips
- Helping Our Economy
- Our Environment
- Social Impacts
- Transit Impacts

Change In Time Required to Travel by Car in 2013 <sup>1</sup>

The estimate difference in the time it will take to travel from your home postal code (V6K) to other postal codes.



Time Required

 Significantly Improved	 Minimally Worse
 Minimally Improved	 Significantly Worse
 No Change	

To compare two futures in 2013, select a "future" from each of the selection boxes below:

Select a Future(1):

Tolled Network

Select a Future(2):

Modest Growth

Click to View

You are currently logged in as: **demo**

[Click to Log Out](#)

To view the results for your neighbourhood, please let us know where you live:

Enter the first 3 digits of your postal code:

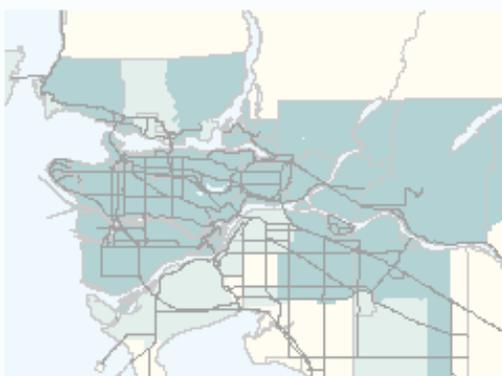
V4L (Delta-Tsawwassen)

Click to View

- » Overall Performance
- » **Travel Time**
- » Typical Trips
- » Helping Our Economy
- » Our Environment
- » Social Impacts
- » Transit Impacts

### Change In Time Required to Travel by Car in 2013 <sup>1</sup>

The estimate difference in the time it will take to travel from your home postal code (V4L) to other postal codes.



Tolled Network



Modest Growth

#### Time Required

 Significantly Improved	 Minimally Worse
 Minimally Improved	 Significantly Worse
 No Change	

To compare two futures in 2013, select a "future" from each of the selection boxes below:

Select a Future(1):

Tolled Network

Select a Future(2):

Modest Growth

Click to View

You are currently logged in as: **demo**

[Click to Log Out](#)

# TransLink Project Summary

- > **Over 40 stakeholder groups**
- > **Over 100 stakeholder representatives**
- > **Over 500 scenarios developed by stakeholders & public**
- > **Over 15,000 visits to the website (10x traditional approaches)**
- > **Used for 2010 plan now underway**

# **PlanMaster**

## **Project Example:**

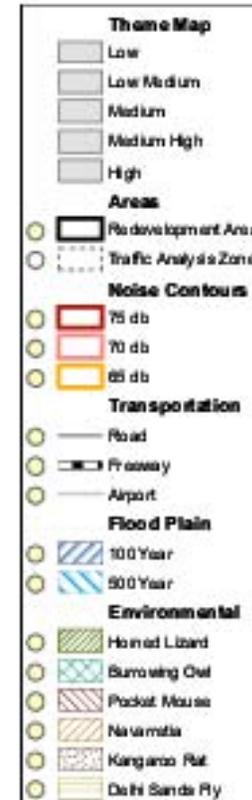
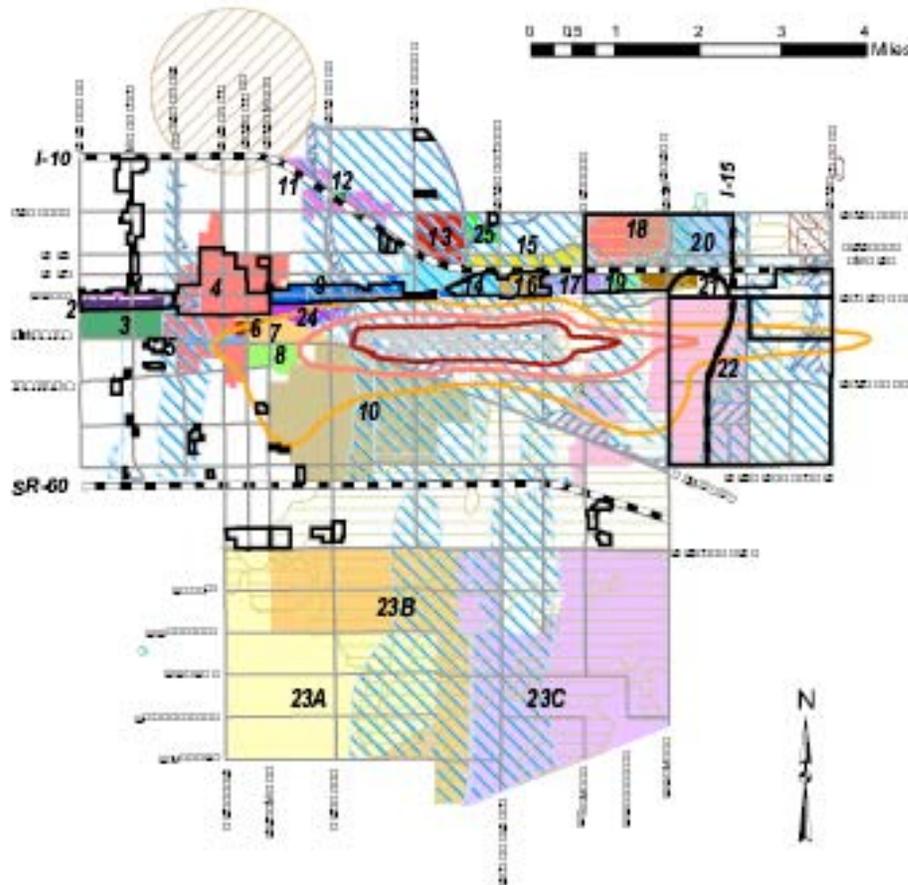
### **City of Ontario – General Plan Update**

VIEW AS CHART

VIEW AS TABLE

VIEW AS MAP

VIEW DOCS



Map scale 1: 135000

Relative Reference

	City-Wide	City-Wide	City-Wide	Apply	Cancel																					
Subarea	General Plan	High Intensity	Medium Intensity	Maps																						
Rest of City	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	Show / Hide Rest of City Maps																						
	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>General Plan</p> </div> <div style="text-align: center;"> <p>High Intensity</p> </div> <div style="text-align: center;"> <p>Medium Intensity</p> </div> </div>																									
	<p><b>Land Use</b></p> <table border="0"> <tr> <td> Rural Res</td> <td> MDR</td> <td> Neighborhood Commercial</td> <td> Admin/Prof</td> <td> Industrial Park</td> <td> OS-Rec</td> <td> Airport</td> </tr> <tr> <td> LDR</td> <td> HDR</td> <td> General Commercial</td> <td> Hospitality</td> <td> General Industrial</td> <td> Public Facility</td> <td> Rail</td> </tr> <tr> <td> LMDR</td> <td> Mixed Use</td> <td> Office Commercial</td> <td> Business Park</td> <td> OS-Non Rec</td> <td> Public School</td> <td> Landfill</td> </tr> </table>					Rural Res	MDR	Neighborhood Commercial	Admin/Prof	Industrial Park	OS-Rec	Airport	LDR	HDR	General Commercial	Hospitality	General Industrial	Public Facility	Rail	LMDR	Mixed Use	Office Commercial	Business Park	OS-Non Rec	Public School	Landfill
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Subarea 1	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Show / Hide Subarea 1 Maps																						
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Subarea 2	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	Show / Hide Subarea 2 Maps																						

**Assumptions**

**Landuse**

**Subarea**

**Use Type**

**Update Value:**

Employees ( / 1000 sqft)

--All--

--All--

--All--

Add to T

Some elements of the current selection are not applicable to the scenario you are currently building. Narrow down your selections in order to edit the specified assumption.

**Assumption To-Do List**

**Current Assumption Values**

- Set FAR (floor area / land area) to '1.000' when:
  - Landuse = 'General Commercial'
  - Subarea = '--All--'
  - Use Type = '--All--'

			Employees ( / 1000 sqft)		
			BUILD	COMPARE	
Landuse	Subarea	Use Type	(Edited) General Plan	High Intensity	Medium Intensity
Administrative / Professional	Rest of City	Office Total	0.986	0.986	0.986
Administrative / Professional	Subarea 24	Office Total	0.986	---	0.986
Administrative / Professional	Subarea 4	Office Total	0.986	0.986	0.986
Ontario International Airport	Rest of City	Industrial Total	0.650	0.650	0.650
Business Park	Rest of City	Industrial Total	0.650	0.650	0.650
Business Park	Rest of City	Office Total	0.986	0.986	0.986
Business Park	Subarea 10	Industrial Total	0.650	0.650	0.650

Clear List

Apply List

# Ontario Project Summary

- > **Detailed evaluation of 22 sites for potential community development/investment**
- > **Multiple-objective evaluation of site plans**
- > **Includes CEQA and transportation indicators**
- > **Plan in final stages of development**

Thank You