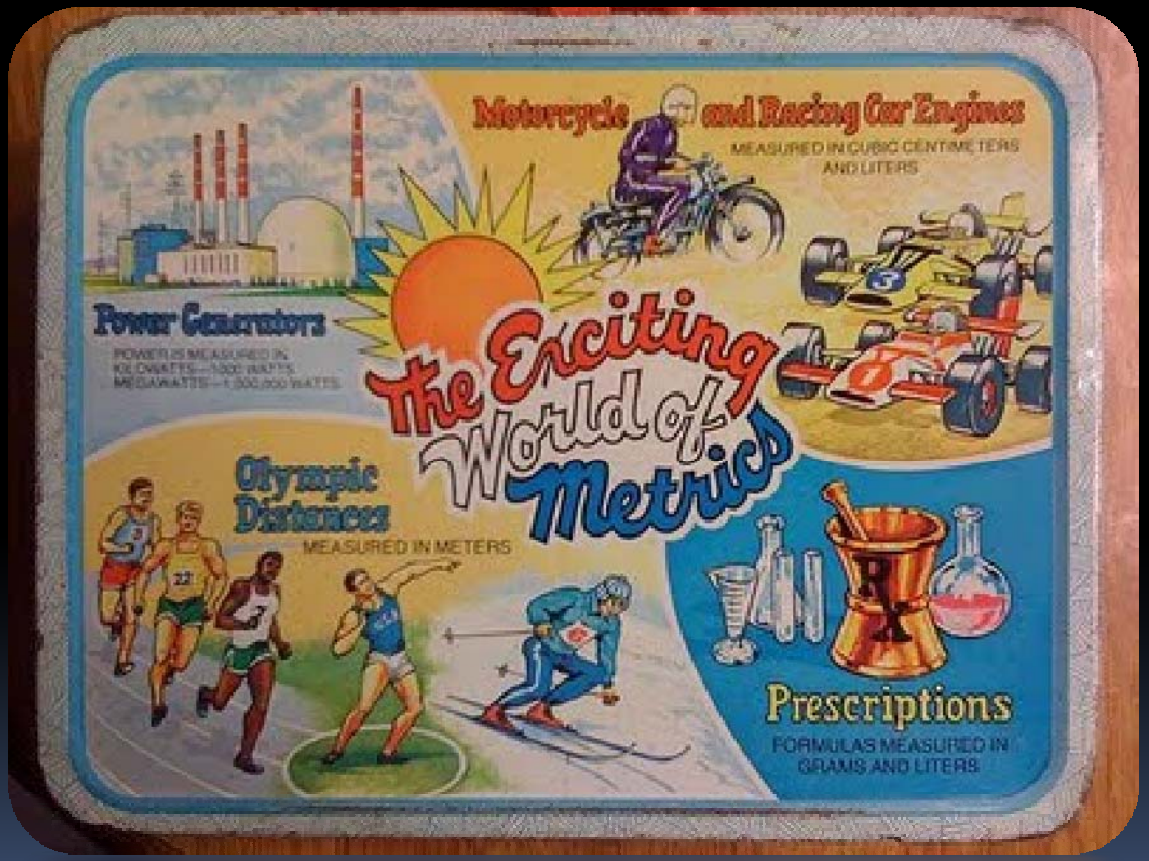
NYSERDA Benefits Assessment



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NYSERDA
5-19-2011

Evaluation Activities

Macroeconomic Analysis

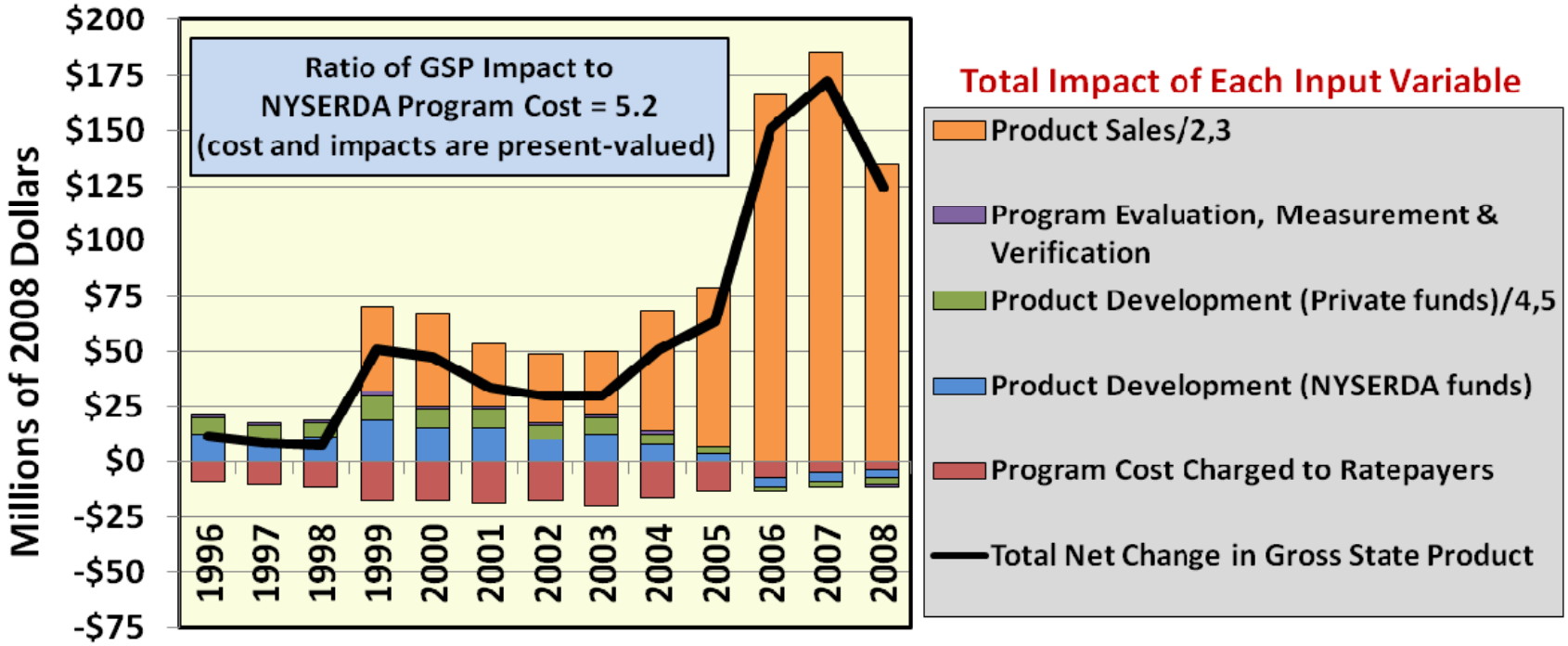
Objective:

- NYSERDA modeled the impact of new product sales using an econometric input-output model, Policy Insight, which generates year-by-year estimates of the total regional effects of specific policy initiatives.

Key Findings:

- Three years of analysis complete, a result of NYSERDA's product development activities:
  - The ratio between NYSERDA funding and change in GSP is 5.2
  - Over 750 net jobs and 5,400 job years were created or saved as a result of the Product Development related activities
  - For the 13-year period from 1996 through 2008, GSP rose by $785 million (2008$)

Change in GSP as a Result of R&D Product Development[1]



[1]Analysis includes only those projects with recoupment contracts with NYSERDA, and estimates impacts of product sales through 2008 as a result of program investments made from 1996 through 2005.

[2]Historical sales estimates are included. Future product sales would generate additional macroeconomic benefits for New York State which are not shown here.

[3]Sales inputs are reduced by 29 percent to account for an estimated portion of products sold that were manufactured out of state.

[4]Projects achieving sales have their investments and expenditures in product development embedded in the "Product Sales" input variable.

[5]Inputs are reduced by 20 percent to reflect the preliminary estimated impact of "free ridership".

Evaluation Activities

Product Development Survey

Objectives:

- Understand the full scope of benefits associated with product development efforts.
- Prove assumptions tied to other evaluation efforts

Key Findings:

- Results highly favorable, proved NYSERDA's influence to:
  - Reduce the period of time required to bring innovative products to market
  - Provide funding at the critical time of product development
  - Assist NY companies in developing and securing the intellectual property necessary to create the next generation of high-technologies
  - Create and retain jobs in New York

Evaluation Activities

Demonstration Project Survey

Objective:

- To realize the qualitative and quantitative benefits of demonstration projects (power production, process improvement & product demonstration) and any attributable replication to understand the total benefit to the NYS economy.

Key Findings:

- 74% of the respondents reported that they have replicated the technology or process, mostly in a similar market or application
- 49% of the respondents reported replicating the technology or process in NY, suggesting that the program is achieving impacts both inside and outside the State

Evaluation Activities

In-Depth Economic Case Studies

Objective:

- To prioritize the R&D product development projects by expected size of the benefits and develop case studies for the largest projects.
- The primary impacts to be assessed are the energy and economic benefits.

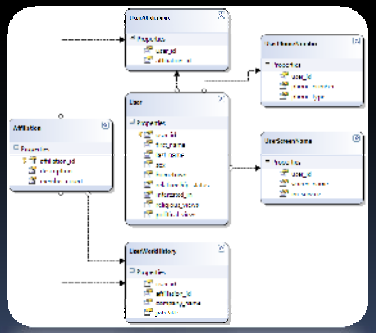
Key Findings:

- Four completed to date (Power Management Device, Mobilized Film Technology (MFTSM) for wastewater treatment, HEV Drive Train, Wind mapping tool)
- All case studies have shown that the benefits as a result of these product developed have far outweighed program costs.

The Solution

Build a database that can:

- Track progress & outcomes of research projects
- Quickly and accurately produce reports
- Provide information for a Benefit/Cost ratio for all of R&D's programs



Key Concepts

Technology Taxonomy

- Dynamic lists that allow users to characterize the technology applicable to their projects
- Dependant on project types
- Enables search and aggregation based on technologies e.g.:

  - All projects related to batteries

  - Distribution of dollars spent on technologies in Electric power supply product development

  - Total annual energy savings for Building Systems

Key Concepts

Project Group

A project group is a collection of project types with similar outcomes. It is used to identify which metrics tabs appear in the database, and consequently which metrics will be collected for the project.

New Sector List

The Metrics Database uses an abbreviated NAICS list.

Keyword List

A way to tag contracts with a term that captures the essence of the topic that is not already a term in the technology taxonomy or in other characterizations.

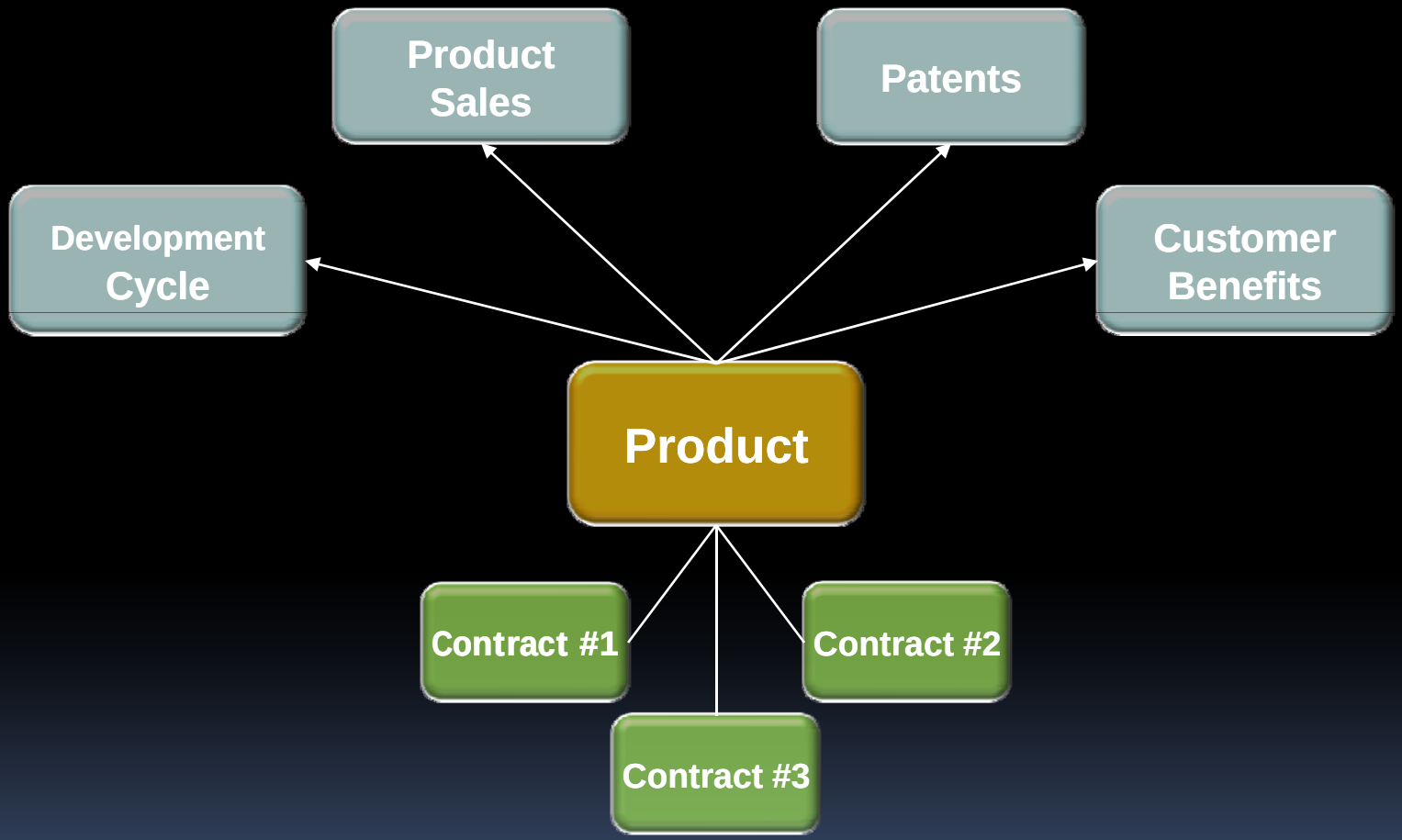
Key Concepts

Resource Lists

The resource lists are the types of resources used or saved in demonstration projects and products developed. It is a series of interdependent lists.

- Resource type 1: Energy, Non-Energy and Air Emissions.
- Resource Type 2: the discrete types of resources under each resource type 1.
- Unit type: the unit of measure used for each resource type 2.

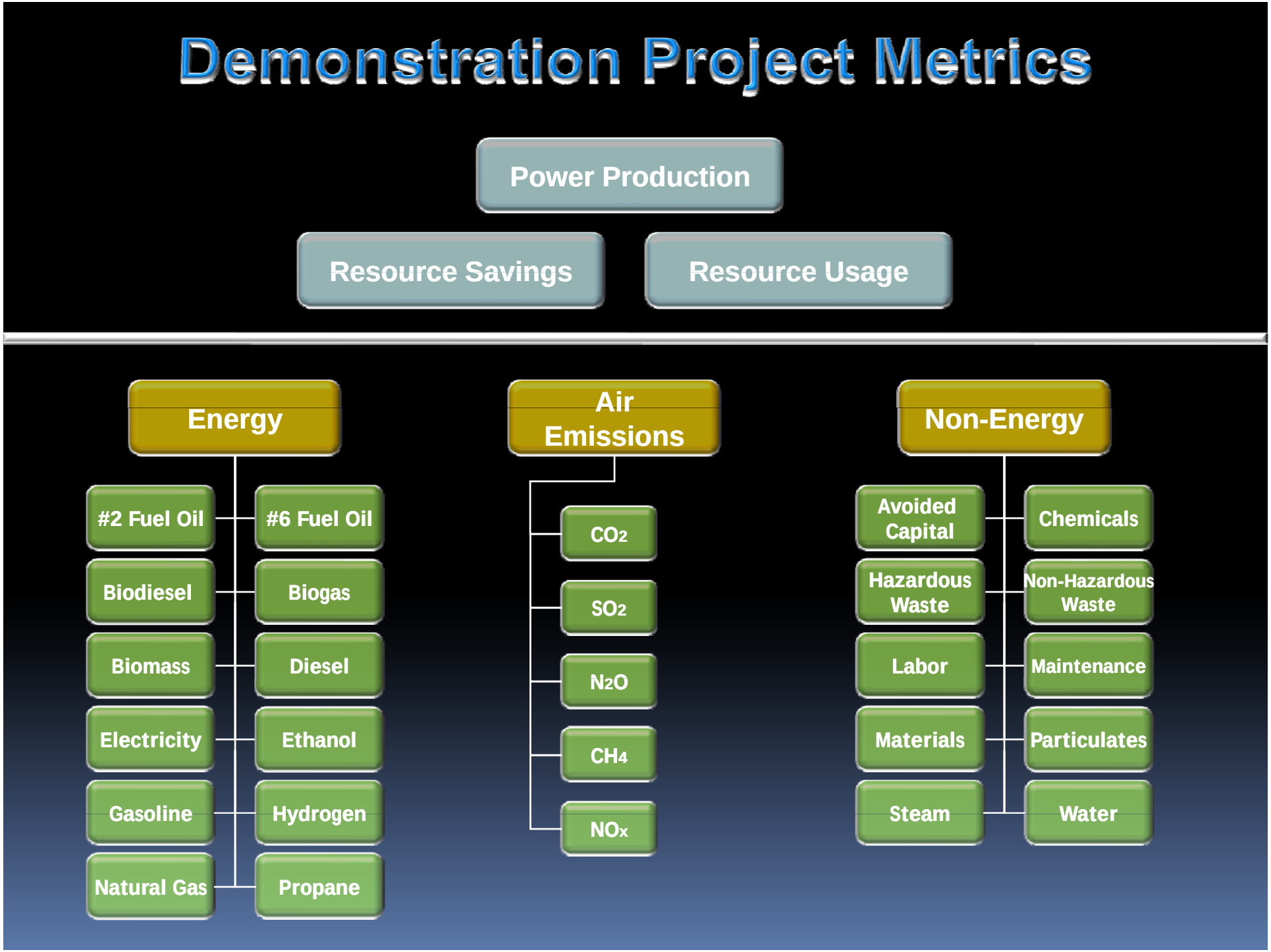
Product Development Metrics



Product Metrics

- Product Sales
- Investments
- Patent information
- Product development stage
- Resource savings
- End-use sector
- Licenses, certifications, UL listings, etc.

Demonstration Project Metrics



Demonstration Metrics

- Energy, Non-Energy & Emissions savings
- Fuel switching
- Job retention/creation
- Replications
- Status & scale of project
- Power production
- System size
- Capacity factor

Information Metrics

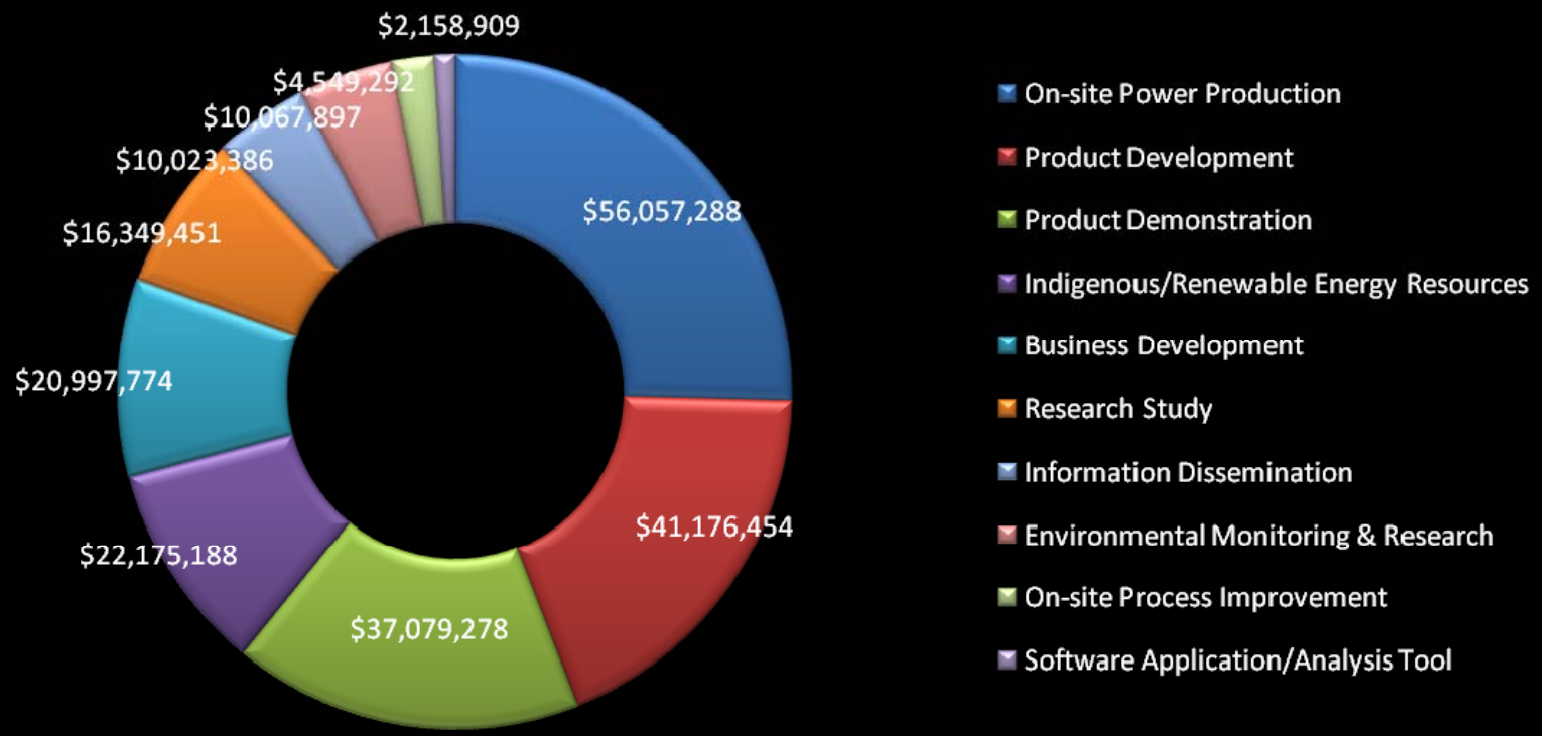
- Publications
- Citations
- Policy influence
- Conferences
- Workshops
- Trainings
- Websites
- Media Events

Business Development Metrics

- Sales
- FTEs
- FTE income
- Investment
- Incubator clients
- Incubator graduates
- Increased capacity
- Executives transitioned to clean energy businesses

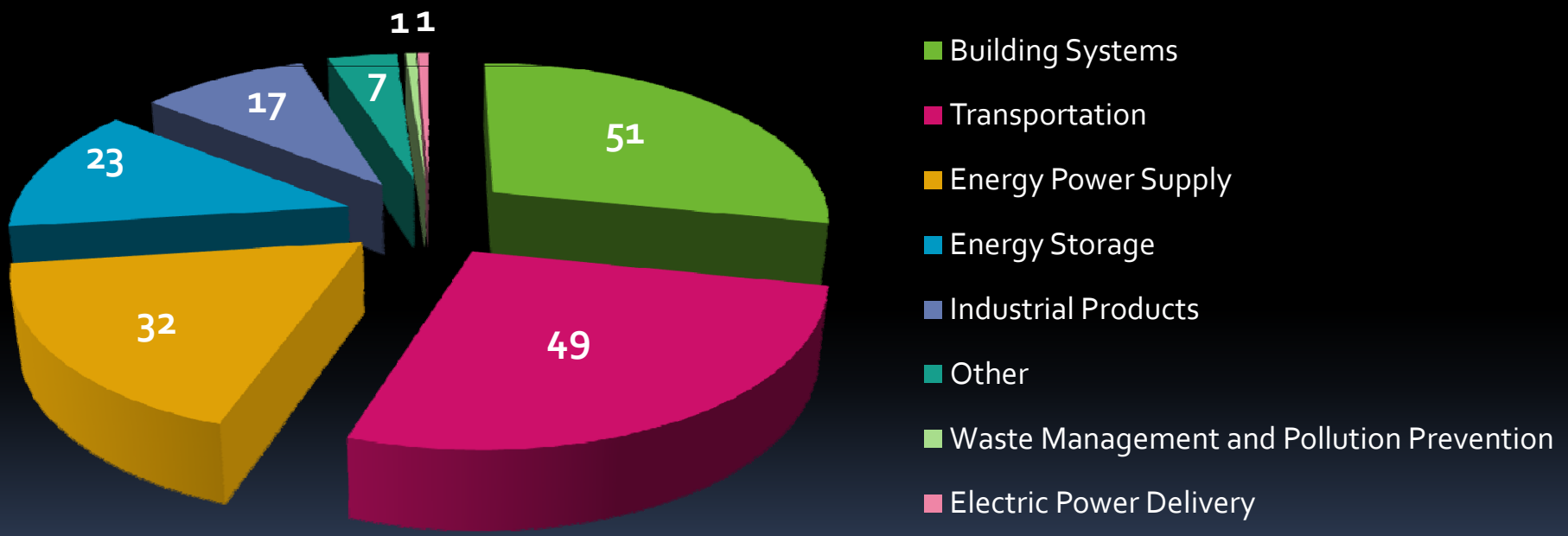
Portfolio Management

Expenditures by Project Type



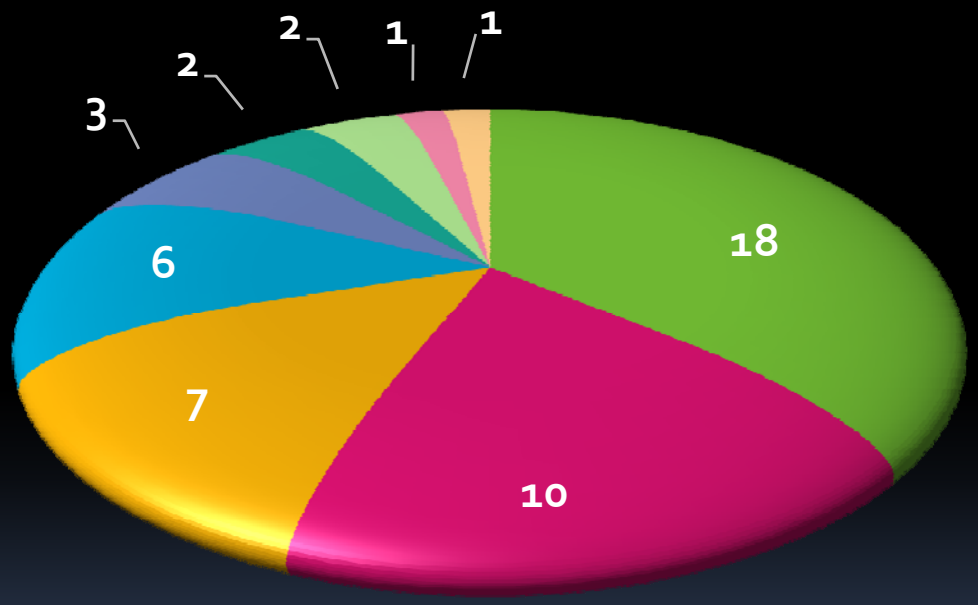
Portfolio Management

Products Under Development by Technology Area



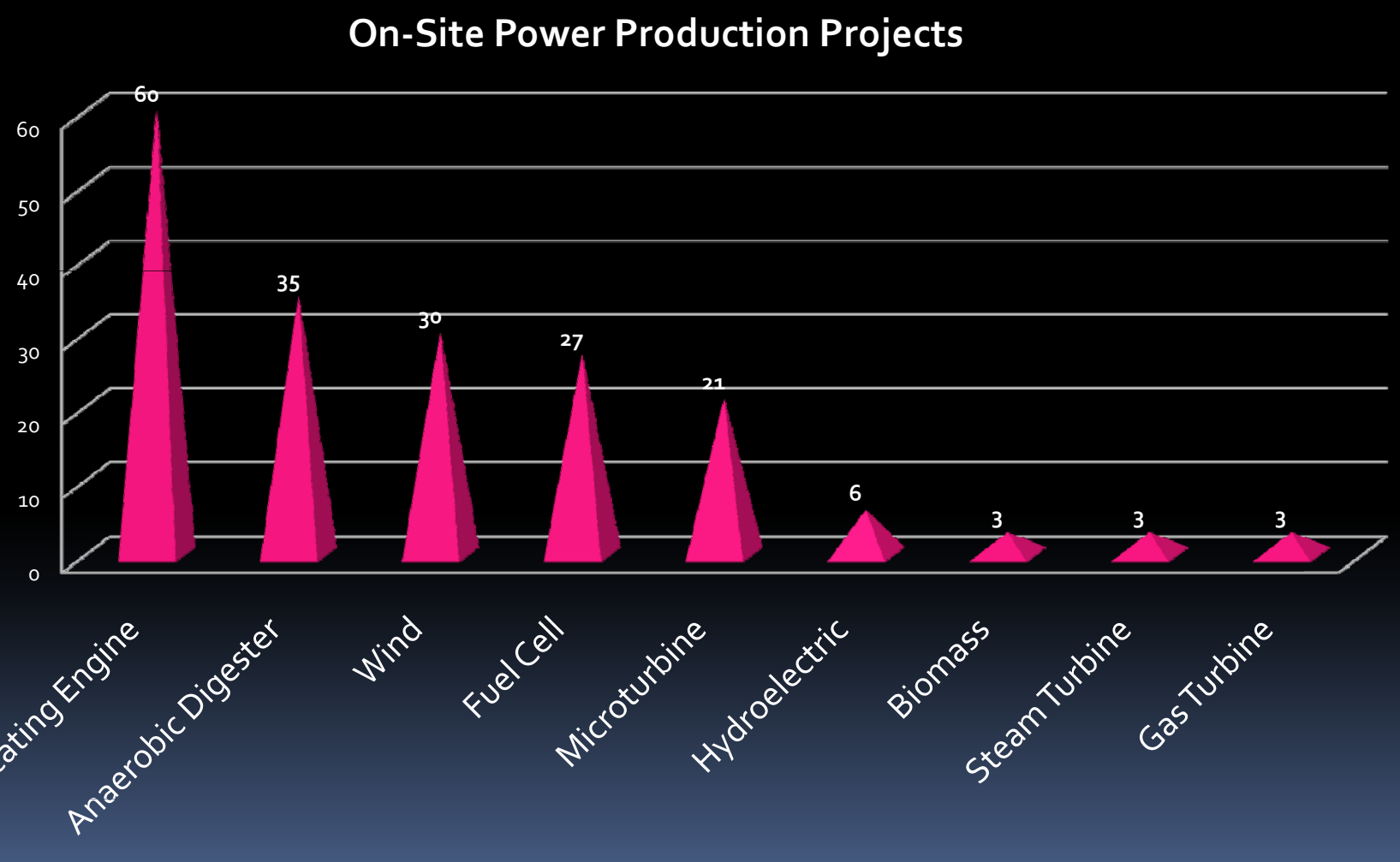
Portfolio Management

Building Systems Products

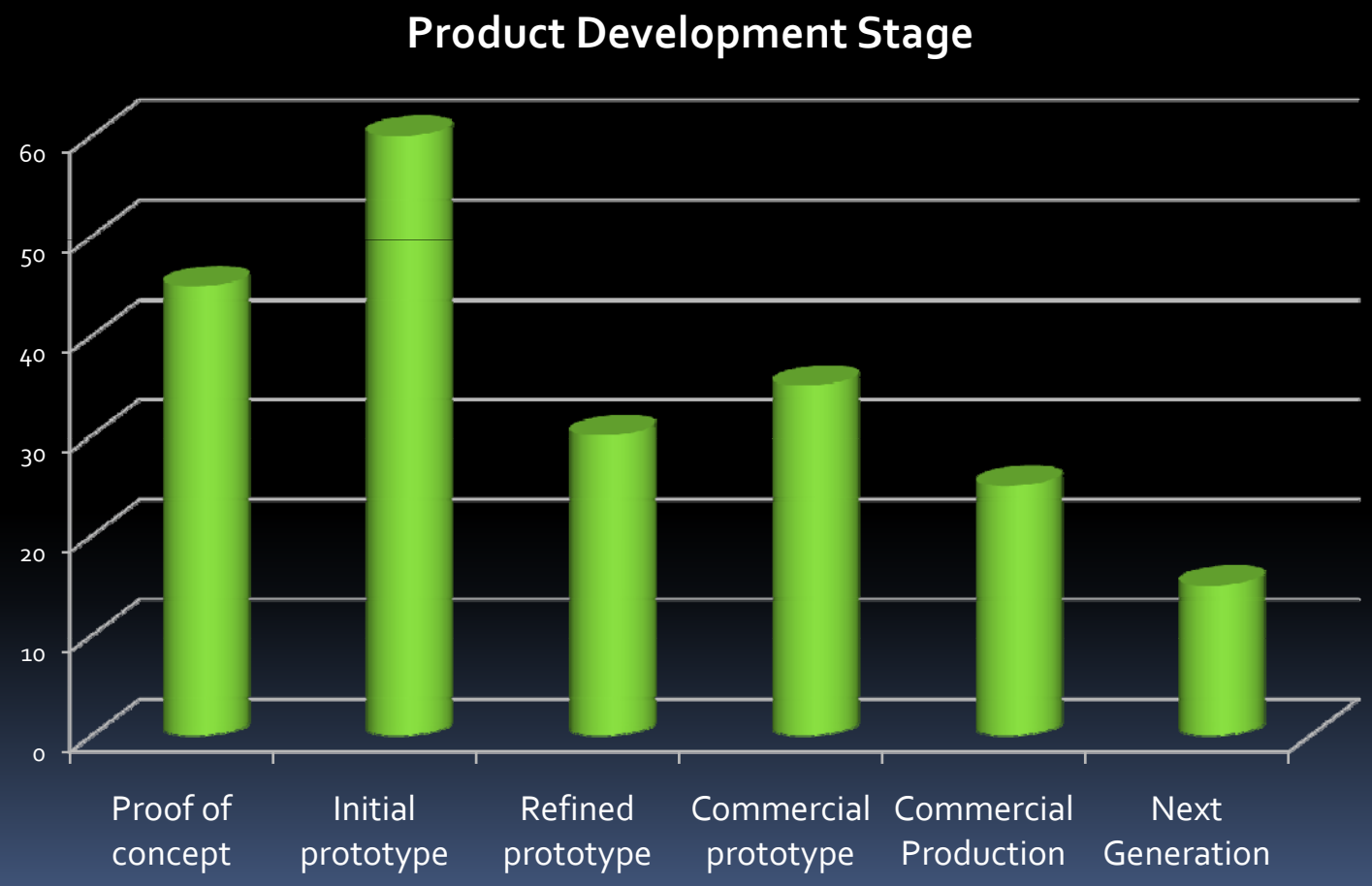


- Heating, Ventilation, & Air Conditioning
- Controls/Sensors
- Lighting
- Materials
- Displays
- Other
- Solar Thermal (heating & cooling)
- Building Construction Methods
- IT Load Management

Portfolio Management

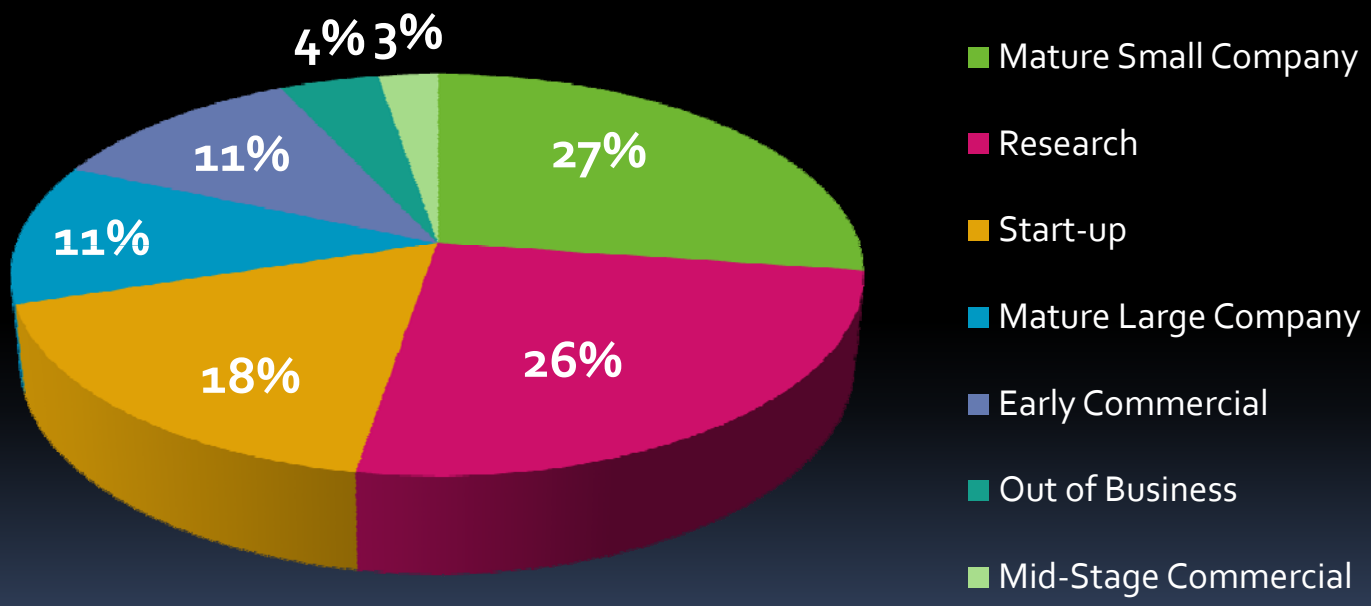


Portfolio Management

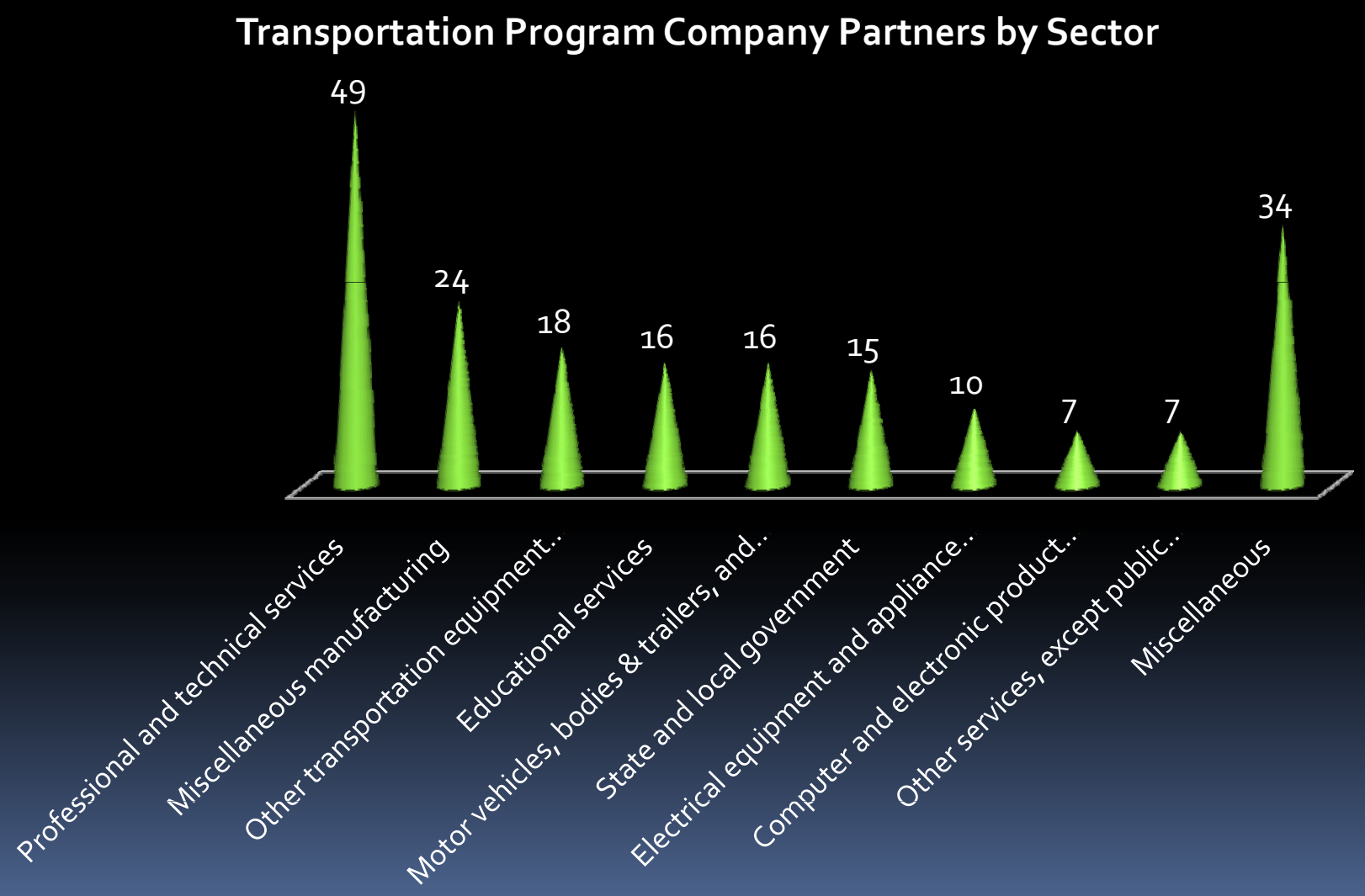


Portfolio Management

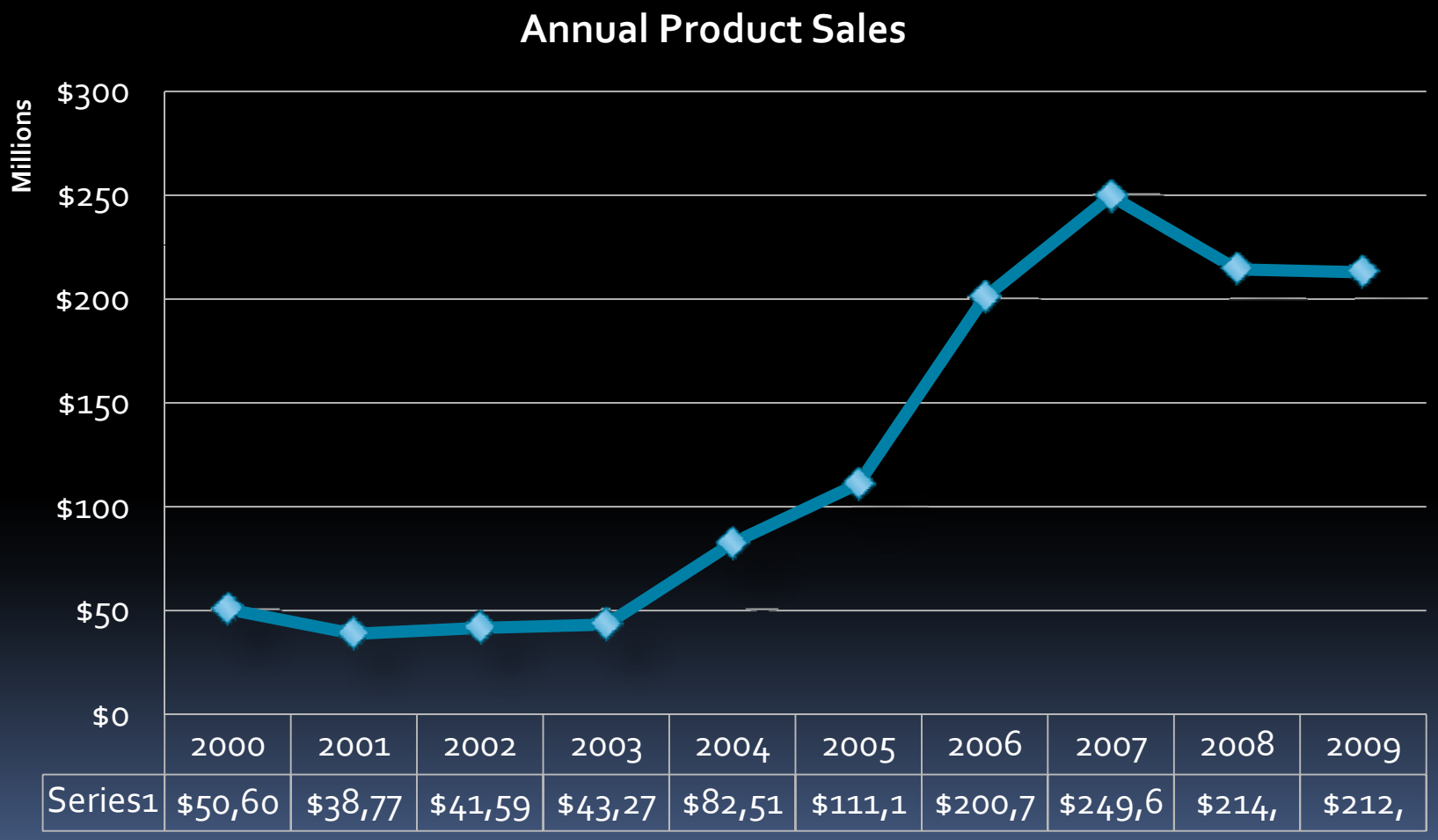
Portfolio of Companies by Stage



Portfolio Management

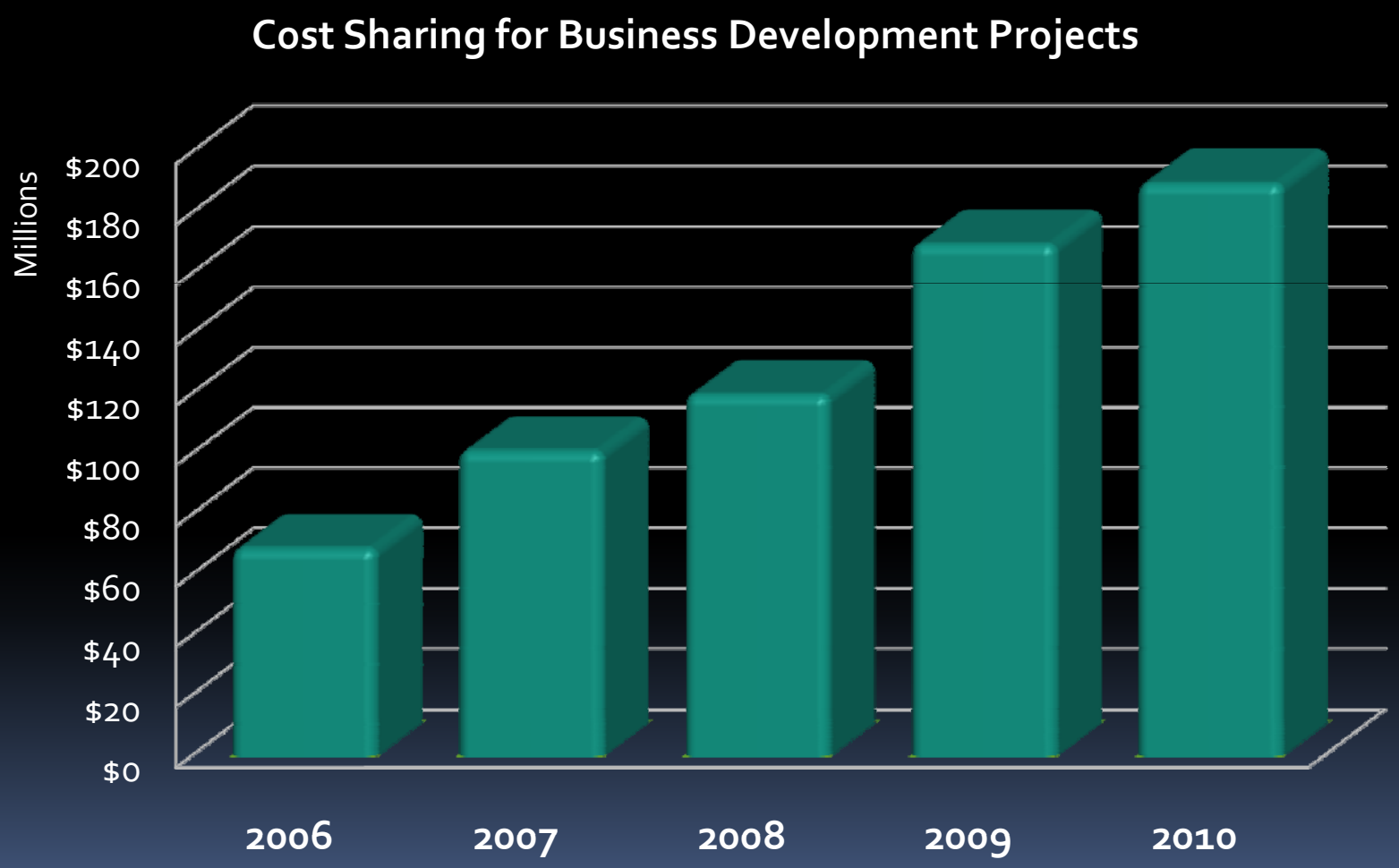


Outcome Metrics



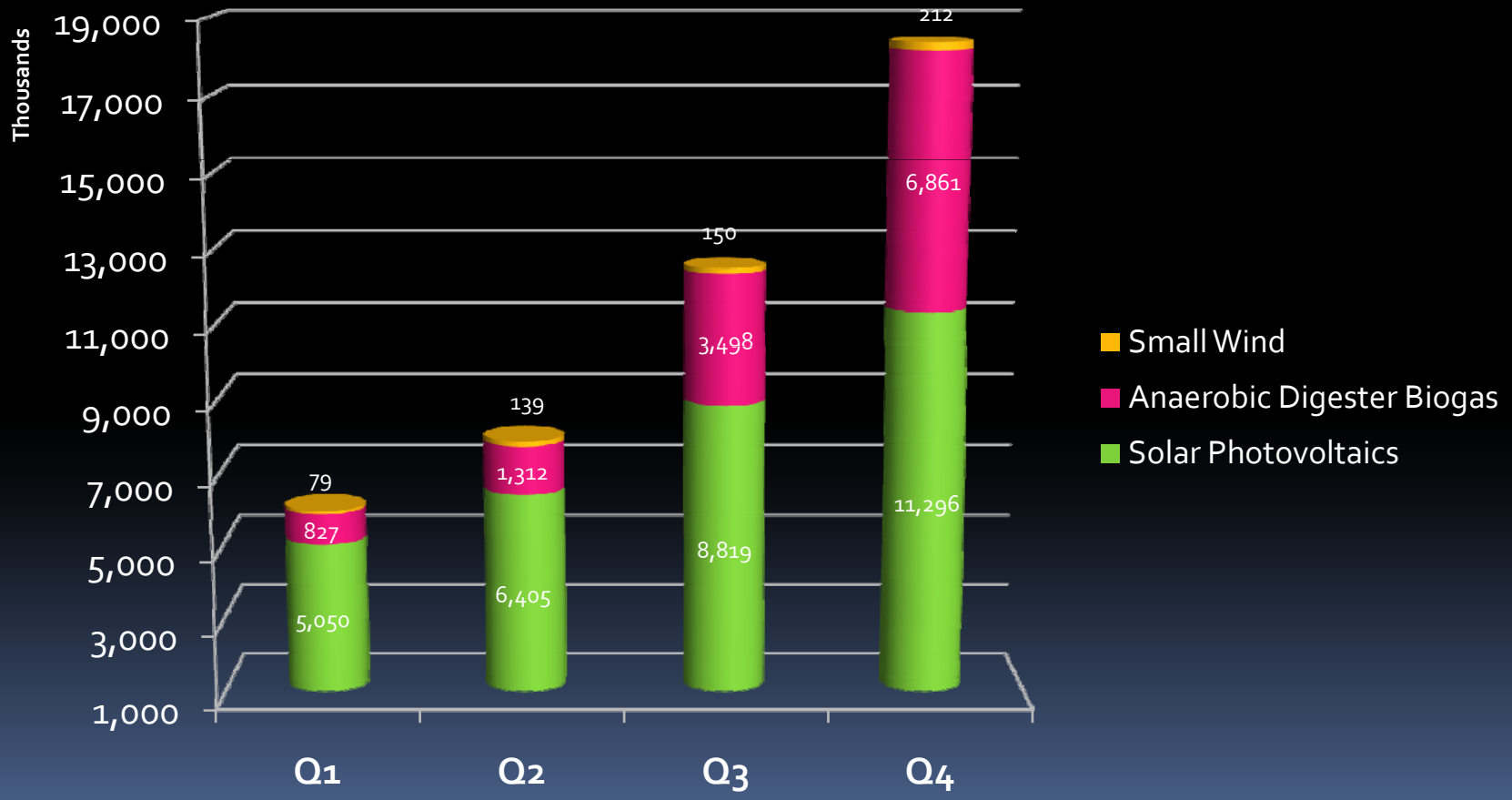
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Series1	$50,60	$38,77	$41,59	$43,27	$82,51	$111,1	$200,7	$249,6	$214,	$212,

Outcome Metrics



Outcome Metrics

Cumulative Renewable Energy Production



Performance Metrics

Efficient Use of Energy

- Electricity (MWh) saved due to improved energy efficiency in New York's buildings and facilities
- Fossil Fuels (MMBtu) saved due to improved energy efficiency in New York's buildings and facilities
- Number of New York Households served
- Number of Commercial and Industrial Customers served

Renewable & Diverse Energy Supplies

- Electricity (MWh) Produced from Renewable Sources
- Number of Operating Renewable Resource Installations
- Electricity (kWh) Produced from Combined Heat and Power (CHP) sources
- Number of Operating CHP installations
- Petroleum Displacement (gallons) in Transportation Sector

Clean Energy Economy

- Number of products in the market as a result of previous technology and business development investment
- Annual Product Sales
- Number of patents, UL Listing certifications, license agreements, copyrights and other knowledge certifications
- Number of jobs created or retained as a result of the net macroeconomic activity stimulated by NYSERDA's energy efficiency, renewable energy, and R&D product development activities
- Change in GSP as a Result of R&D Product Development, expressed as a ratio of GSP impact to NYSERDA investment in R&D product development

A Cleaner Environment

- CO_2 equivalent emission reductions (tons)
- Reduced Air Pollutant NO_x Emissions (tons)
- Reduced Air Pollutant SO_2 Emissions (tons)

Satisfied Customers

- Contract Processing Time – Median time to process:
  (1) Contracts awarded from solicitations
  (2) Open enrollment incentives
  (3) Direct contracts
  (4) Modifications / Task Orders
- Percent of Payments made within 30 days

- Number of Clean Energy Businesses receiving financial assistance
- Dollars invested by NYSERDA in business development activities
- Dollars invested by businesses receiving financial assistance
- Number of Workers Trained in Clean Energy Sectors

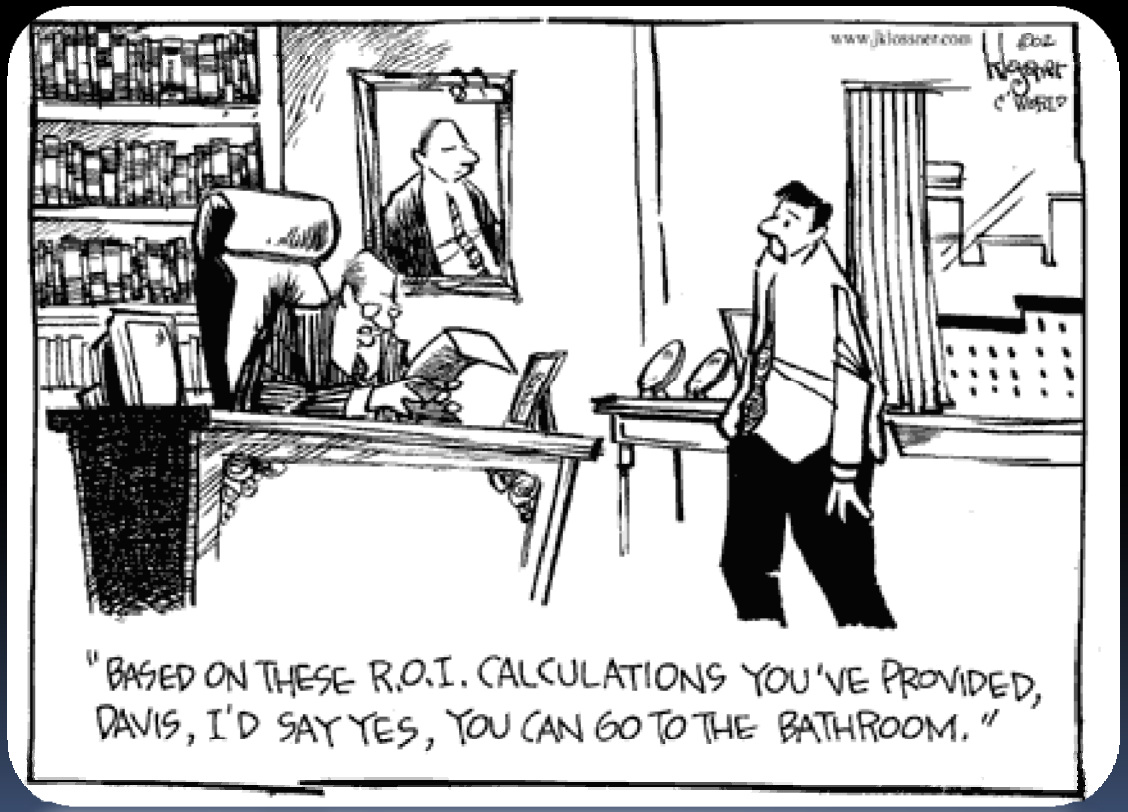
The Challenges

- Getting data from contractors
- Whole program analysis
- Evaluation of smart grid, storage & other leading activities
- Measurement of environmental impacts translation to economic development potential
- Understanding the relationship between technology & business development

Future Evaluation

- Key Performance Indicators
- Track replications of demonstration projects
- Add energy savings to macro-economic model
- Continue conducting surveys

Questions?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