

# Utility Approaches to Planning for GHG Regulation

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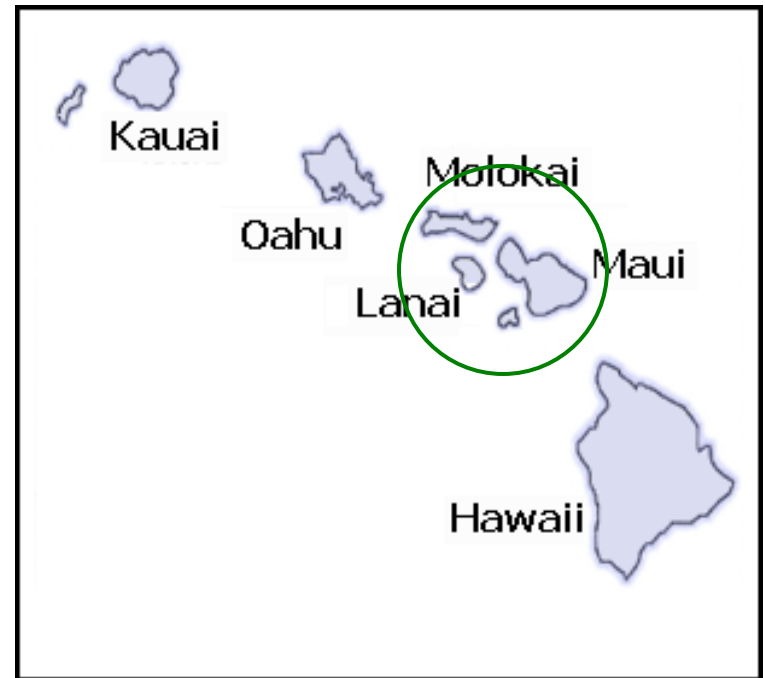
# Agenda

- What is Integrated Resource Planning?
- Key Decision Drivers
- Issues Unique to the Utility Space
- Mitigating Risk to GHG Regulation



# About Maui Electric Company

- Maui Electric Company, Limited (MECO) is an investor owned, publicly regulated electric utility serving the County of Maui
- MECO serves approximately 66,000 residential and commercial customers on Maui, Lanai, and Molokai
- As of year-end 2007:
  - > MECO's Gross Generating Capacity was 287.7 MW, demand was 221.2 MW
  - > Renewable resources account for approximately 316 GWH or 25% of sales



# About Summit Blue Consulting

## Clean Energy Program Support



## Additional Areas of Expertise:

- Asset Valuation
- Due Diligence
- Policy Analysis and Design
- Social Marketing
- GIS Mapping
- Information Management
- GHG Regulation



- Energy Efficiency
- Demand Response
- Distributed Renewable Energy

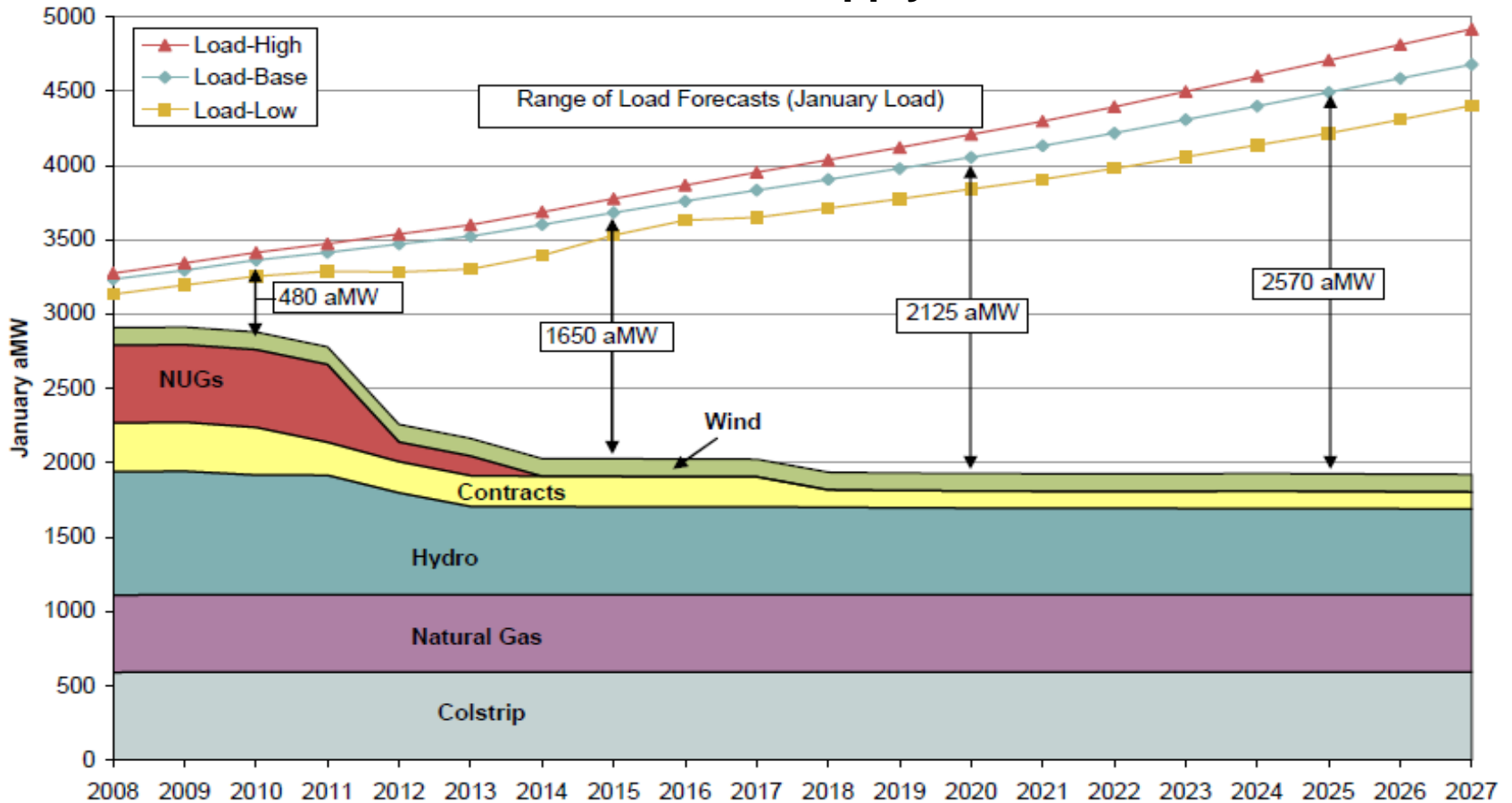
# Integrated Resource Planning

## A Utility's Plan to Meet Demand

- Filed for regulatory purposes, require regulatory approval
- Forecast demand for next 20-30 years
- Involve complex modeling to capture variety of risks
- Develop resource portfolio options for meeting additional resource needs

# Integrated Resource Planning

## Puget Sound Energy's Forecasted Demand Compared to Existing Resource Supply



Source: Puget Sound Energy Integrated Resource Plan, 2007

# GHGs Are Considered in IRP Process

Utility	Stated Goal
<b>PacifiCorp</b>	None
<b>Portland General Electric (PGE)</b>	None
<b>Public Service of New Mexico (PNM)</b>	None
<b>Puget Sound Energy (PSE)</b>	Commitment: Meet California Standard <sup>1</sup>
<b>Xcel Energy / Northern States Power (Xcel/NSP)</b>	Non-Binding Target: Meet MN State Goals for GHG Reduction <sup>2</sup>
<b>Xcel Energy / Public Service of Colorado (Xcel/PSCo)</b>	No Commitment to Colorado Targets Due to Constraints on Ratepayer Impacts

Notes:

<sup>1</sup> CA's current standard requires that all new resources used to serve CA demand must have lower CO<sub>2</sub> emissions than combined cycle natural gas plants (1,100 lbs CO<sub>2</sub>/MWh).

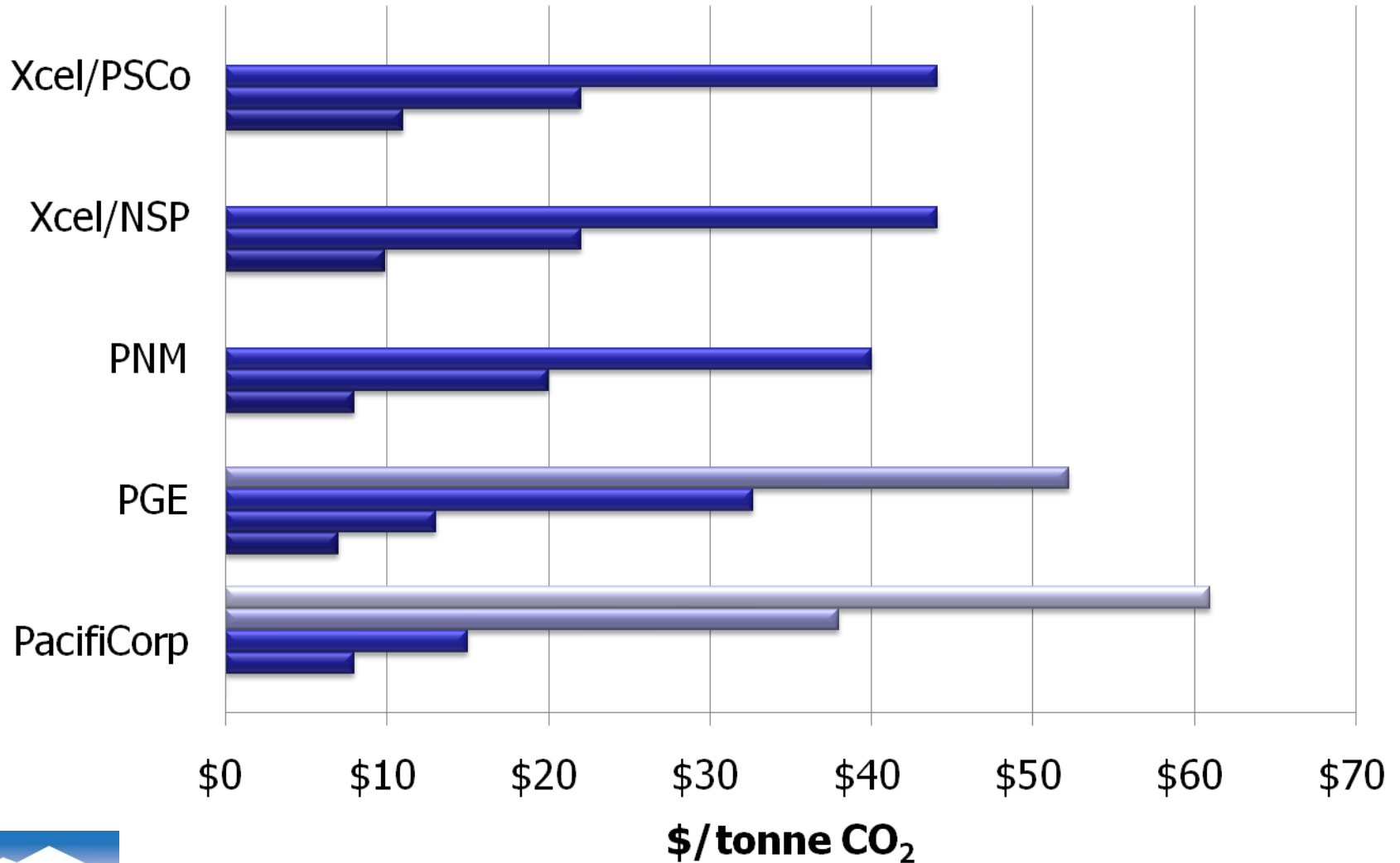
<sup>2</sup> MN state targets emissions reductions below 2005 levels: 15% by 2015, 30% by 2025, 80% by 2050.

# Key Drivers for Including GHGs

- State-level targets
- Regional/state regulation – RGGI, California
- Anticipated federal regulation
- Stakeholder concerns

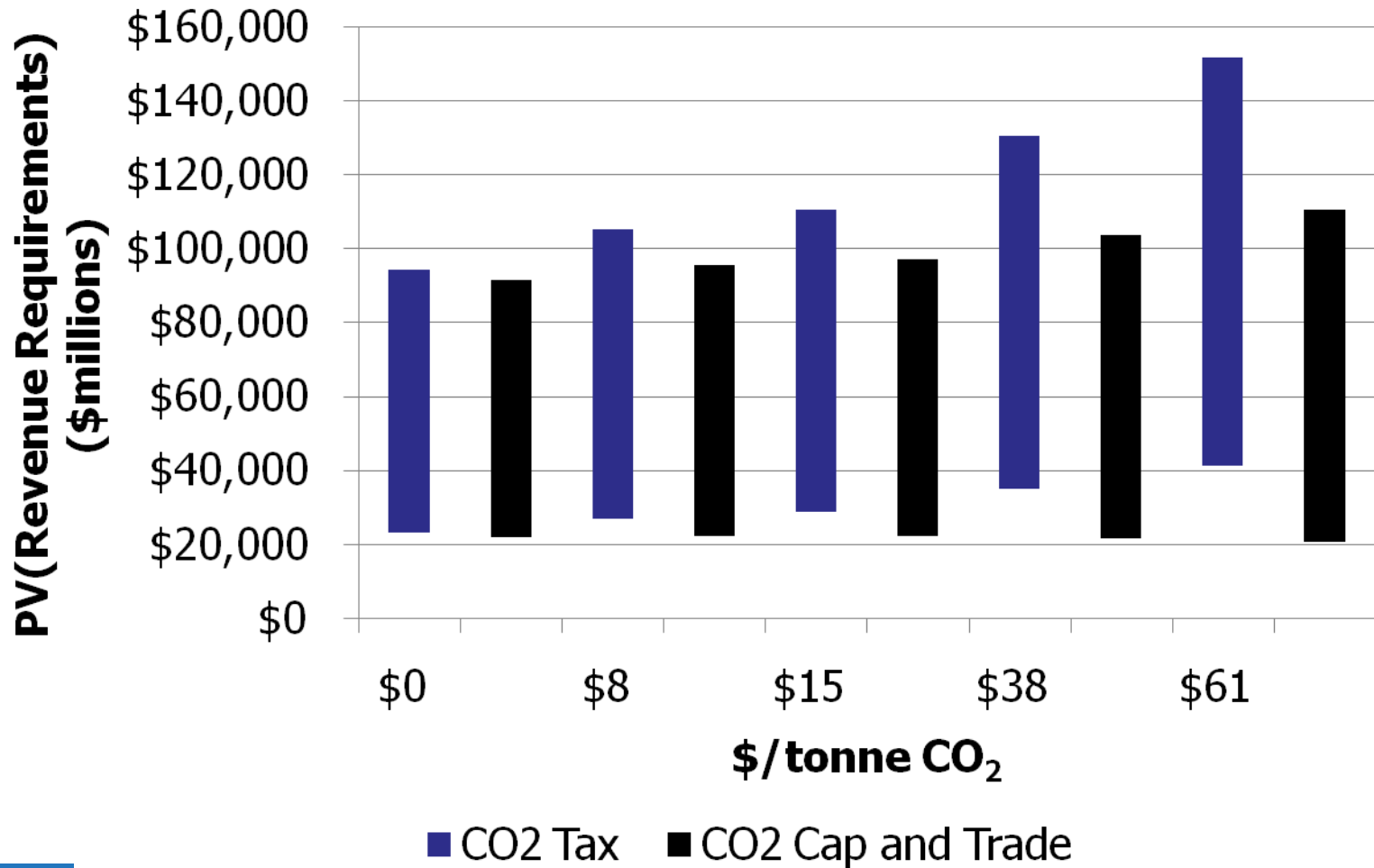
# Key Decision Drivers

## Assumed Cost of CO<sub>2</sub>



# Key Decision Drivers

## Carbon Tax vs. Cap-and-Trade



Source: PacifiCorp Integrated Resource Plan, 2007

# Utility Considerations

## Drawing the Boundary for Analysis

Spot Market Power Purchases

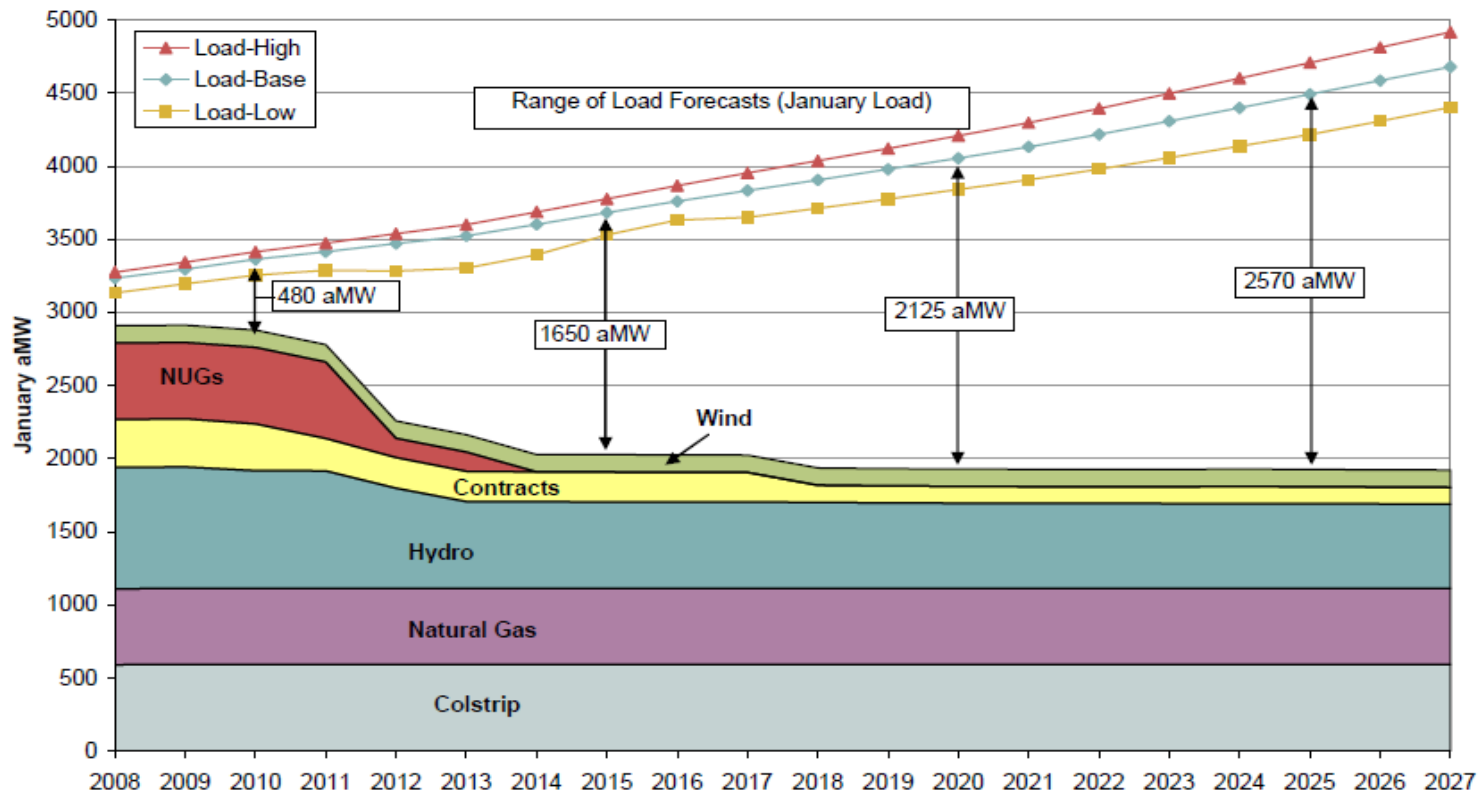
Long-Term Power Purchase Agreements

Self-Owned Generation

# Utility Considerations

## Impact of GHG Regulation on Demand

- Assumptions about rate of economic growth may need to be adjusted if cost of CO<sub>2</sub> slows or accelerates economic growth
- Not done to date



Source: Puget Sound Energy Integrated Resource Plan, 2007

# Risk Mitigation

## Renewable Energy Additions

- Wind is dominant resource considered
- Concentrated solar thermal popular in Southwest
- Distributed resources – PV, PHEVs, “Smart Grid”
- Emerging technologies – fuel cells, wave, tidal

## Demand-Side Resources

- Accelerated demand-side targets
- Reaching niche markets: social marketing
- Ramping up efforts to feed the technology pipeline

## Coal Resources Under Scrutiny

- Disallow new coal additions
- Retire existing coal plants
- Some investment in carbon capture and sequestration technologies

# GHGs and Planning from the Utility Perspective

- Regulators and other public stakeholders heavily influence the process.
- Uncertainty in CO<sub>2</sub> price creates unstable climate for capital investment decisions.
- Learning curve for integrating renewable energy and demand-side measures is steep.
- Interest in sharing practices across service territories is growing.

# Contact Information

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