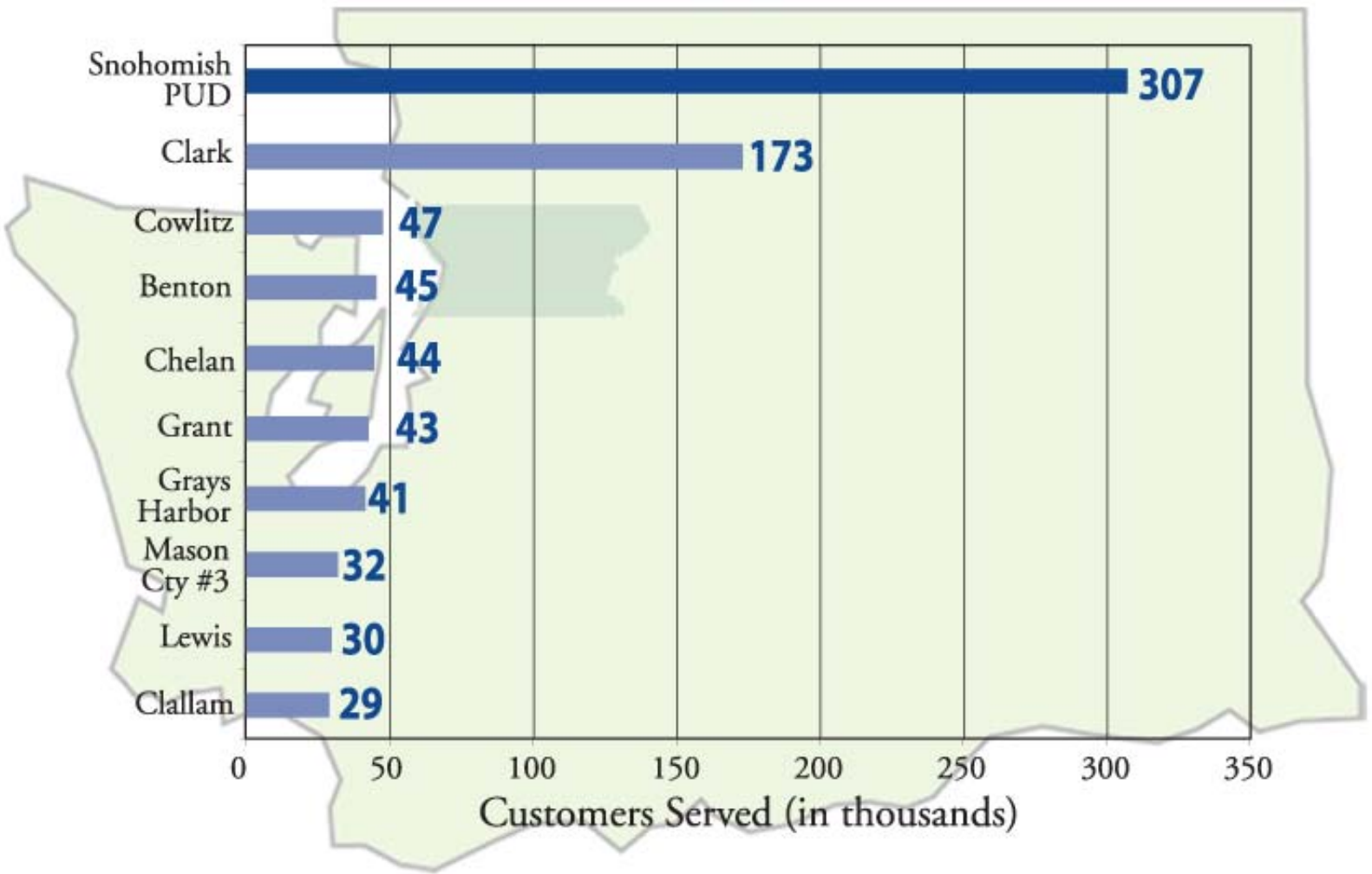
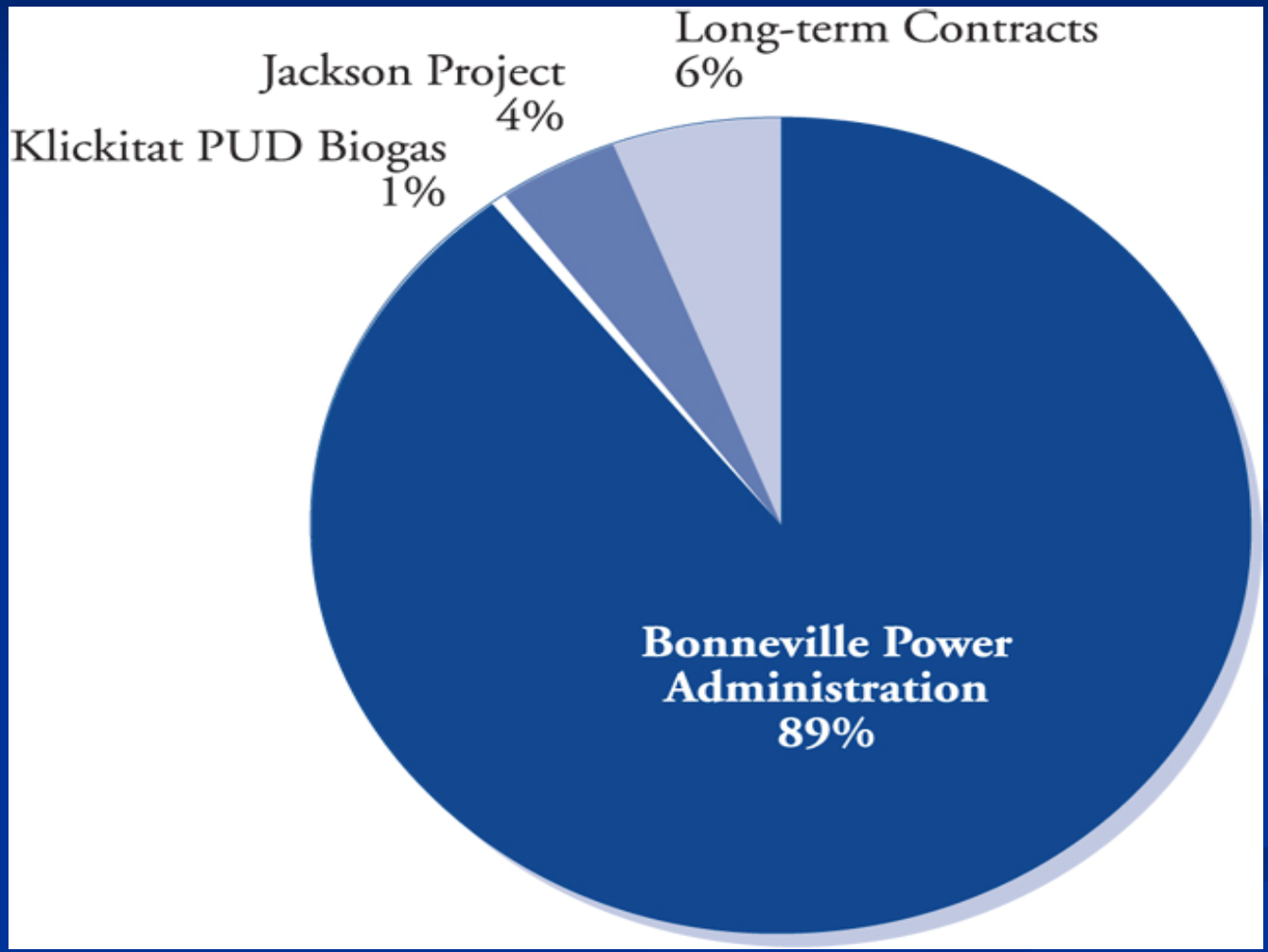
# Snohomish County PUD Electric Load Growth: Challenges and Opportunities

ACEEE Fourth National Conference
Energy Efficiency as a Resource
Berkeley, CA
October 2, 2007

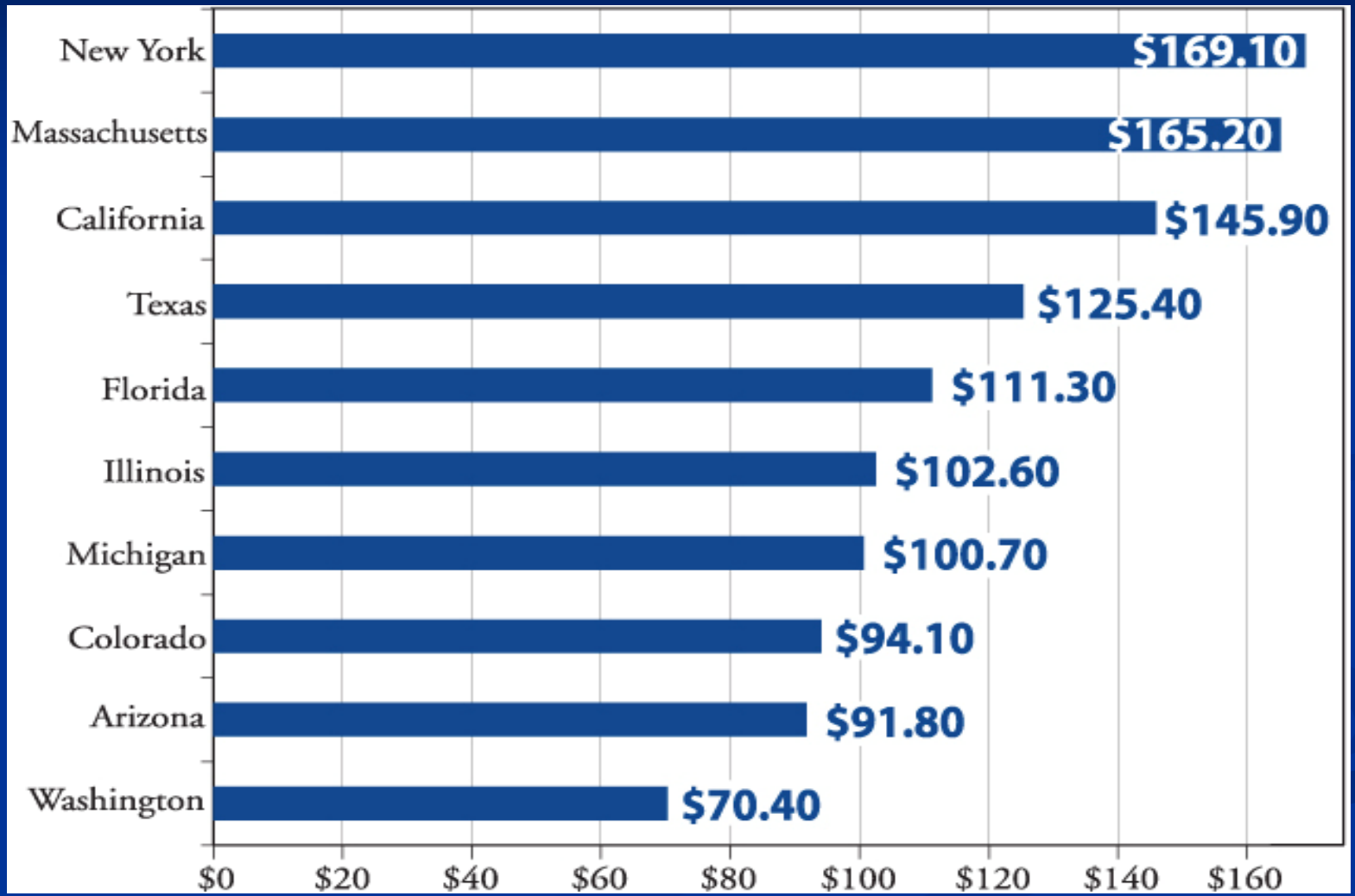
# Largest PUD in Washington State



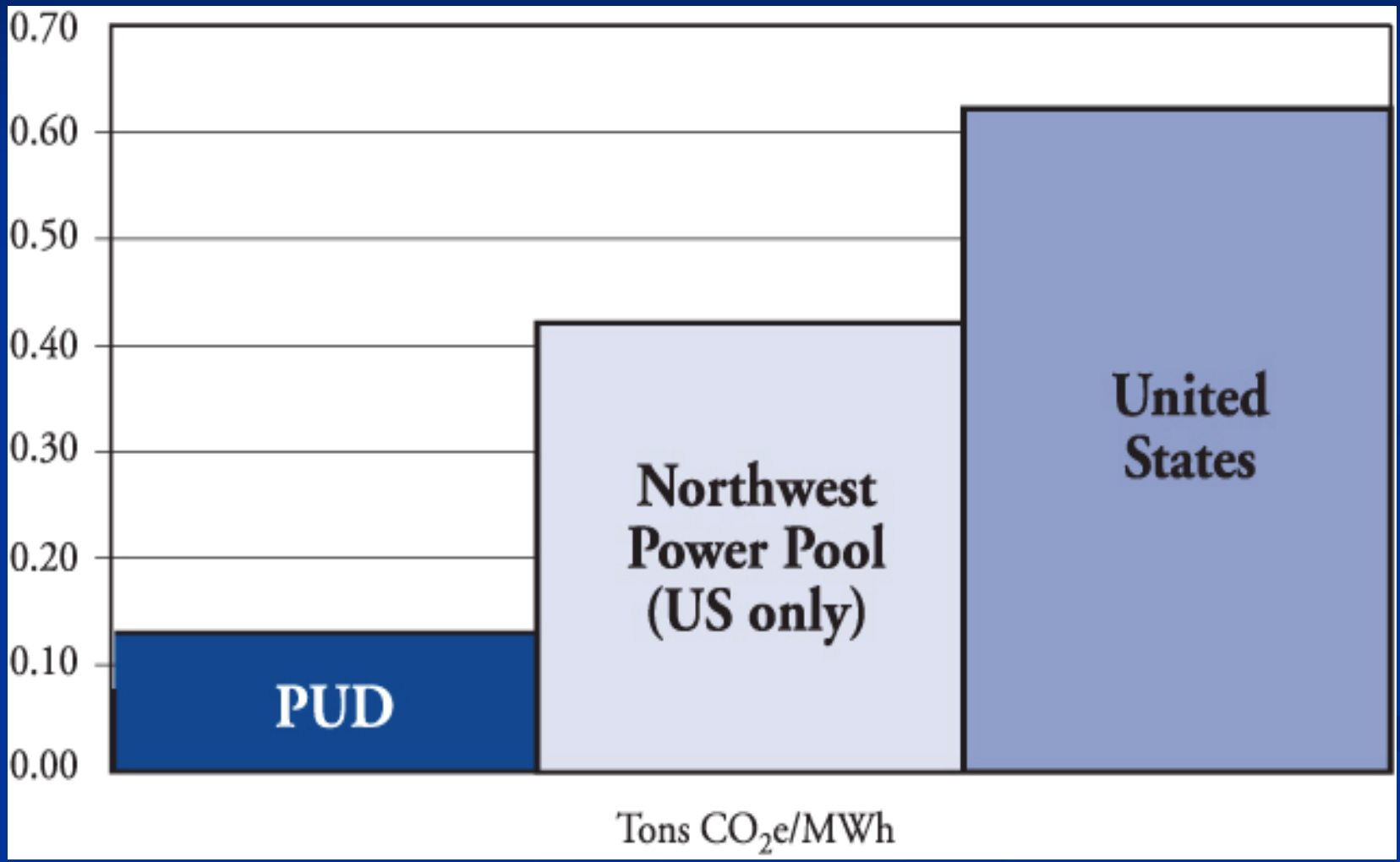
# Power Retail Resource Mix



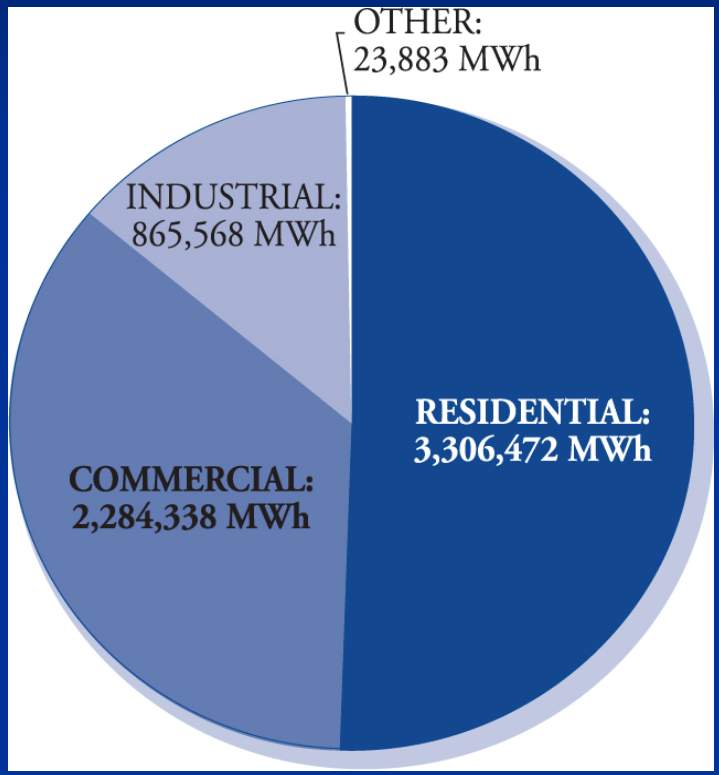
# Comparison of Residential Rates



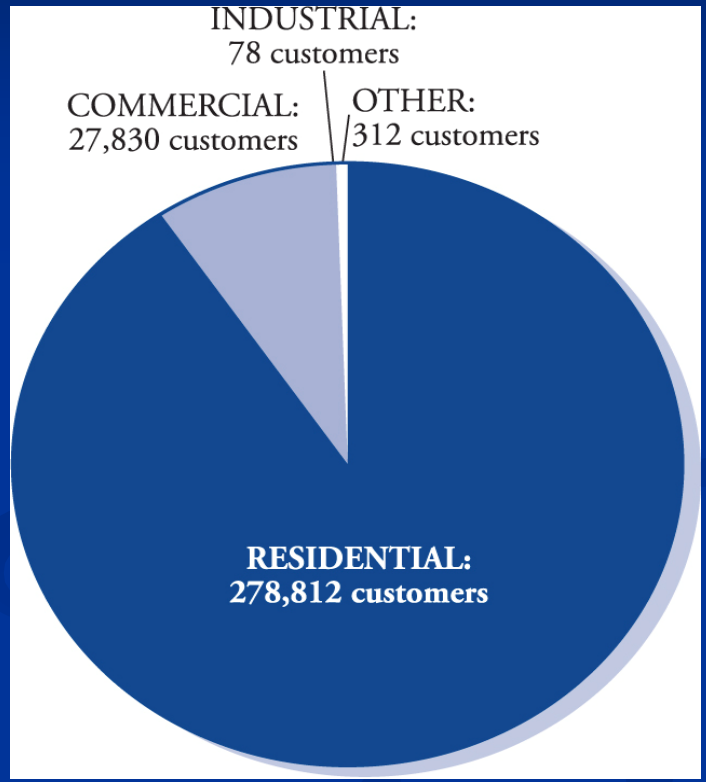
# Emissions CO2/MWH



# Customer Categories



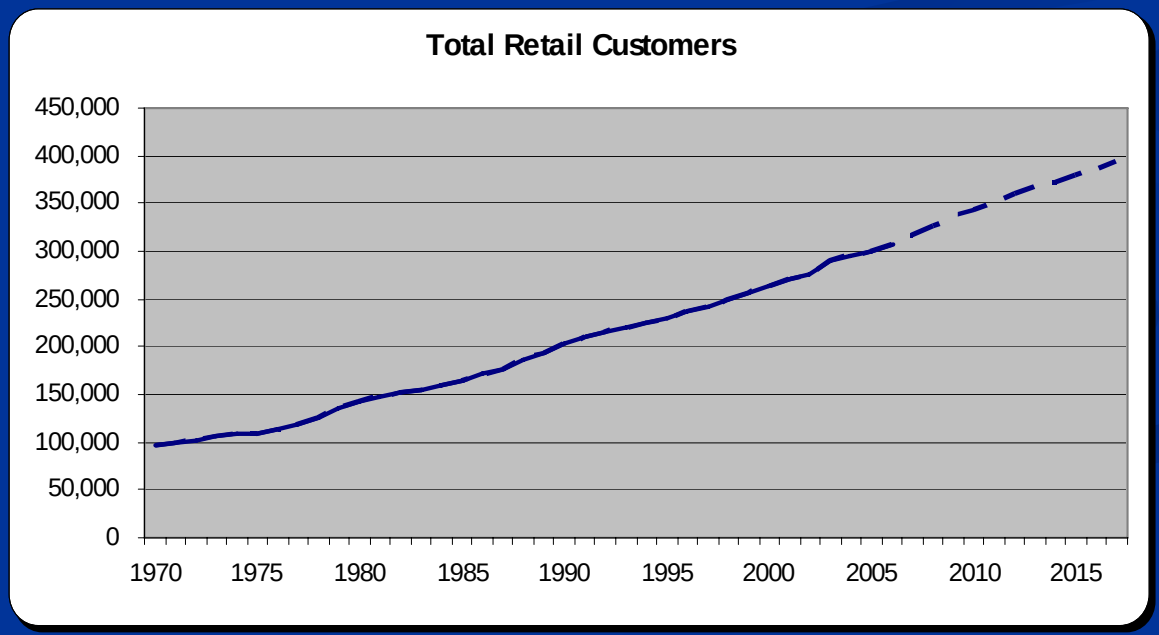

By Megawatt-hours Sold




By Customer Type

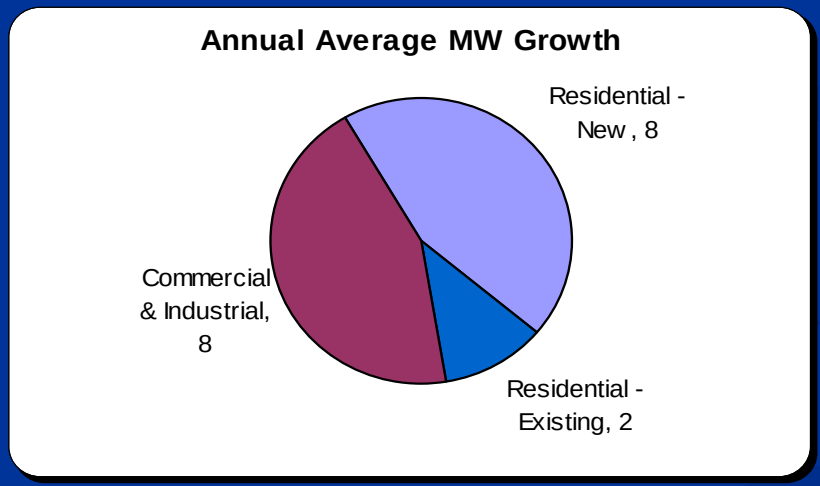
# Population Increase and Aerospace Employment are Driving Growth

- Population will increase by more than 150,000 people over next ten years.
  - Partly driven by high regional economic expansion.
- Aerospace employment will increase by 37%.
- Rising share of growth taking place in north part of county.



# Load Forecast Summary

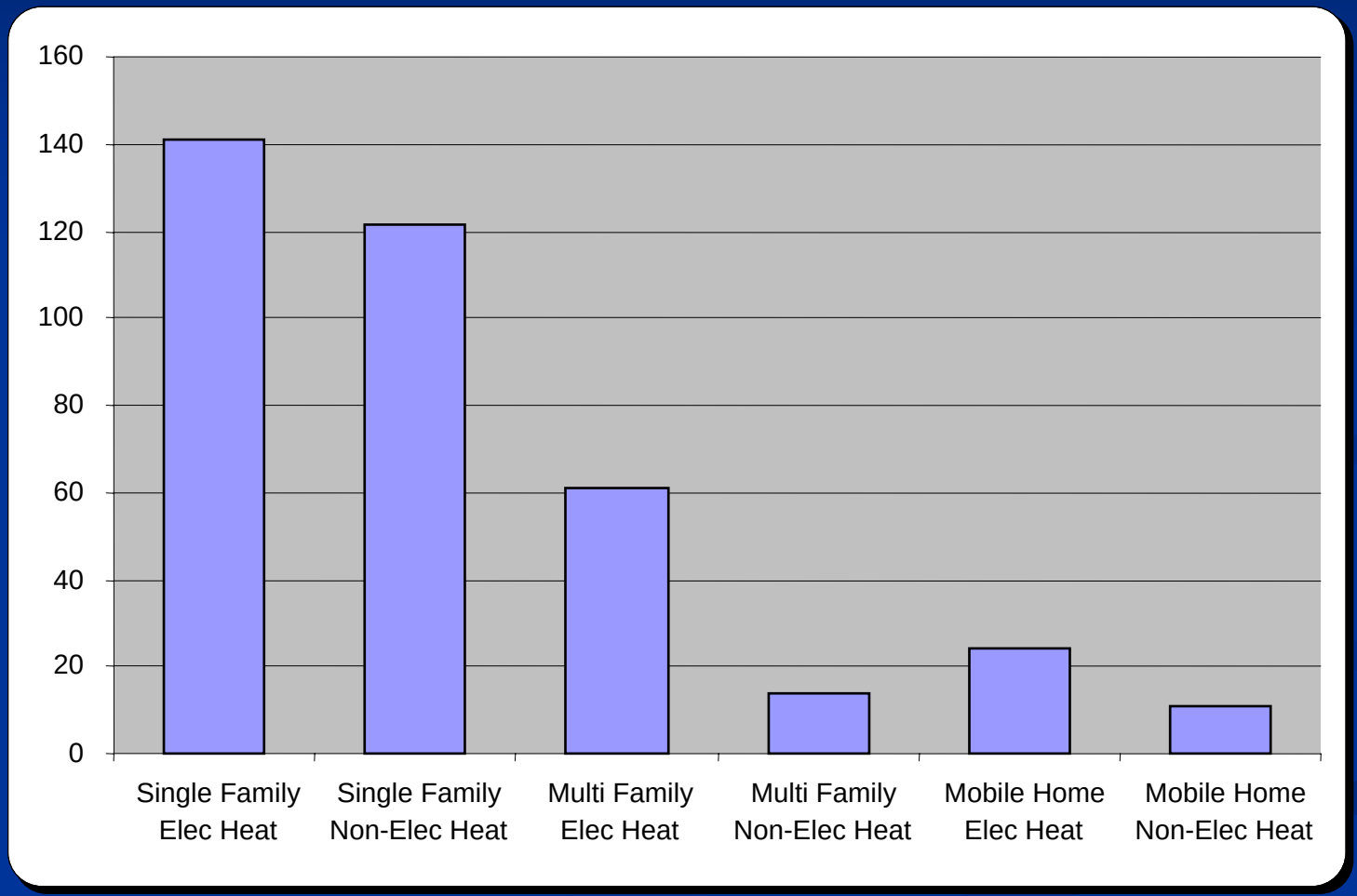
- Next Ten Years
  - 85,000 new customer connections
  - 18 average MW growth per year
  - 10 average MW per year of the total is residential growth
    - 8 average MW per year from new residential customers.
    - 2 average MW per year from existing residential customers.




  - 6 average MW of conservation planned
  - Net 12 average MW growth per year requiring new power sources

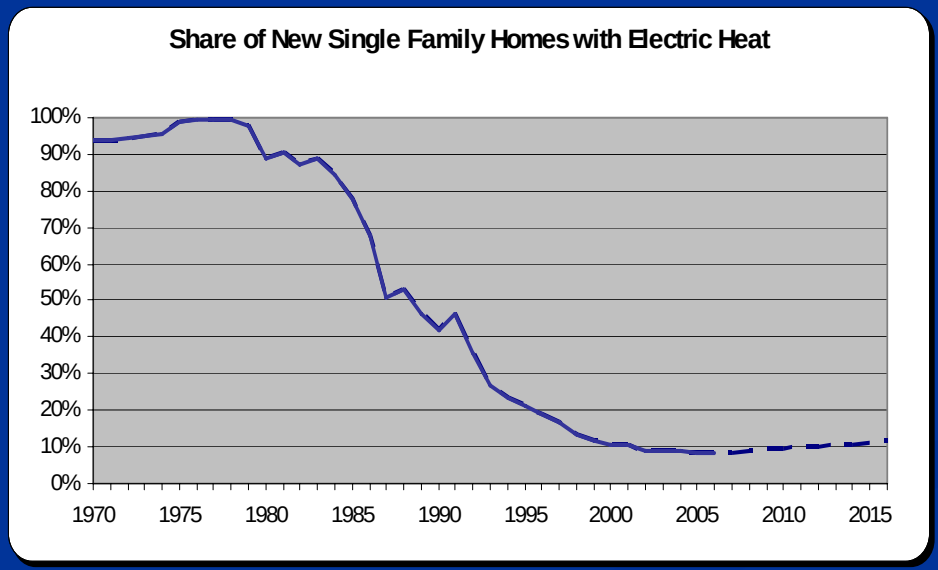
# Loads by Housing Type

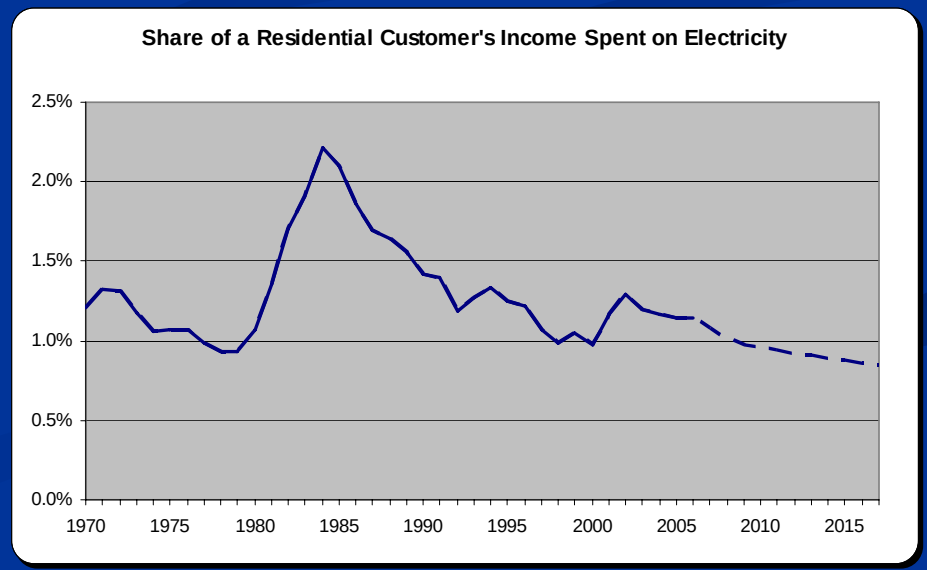
## 2006 Average MW



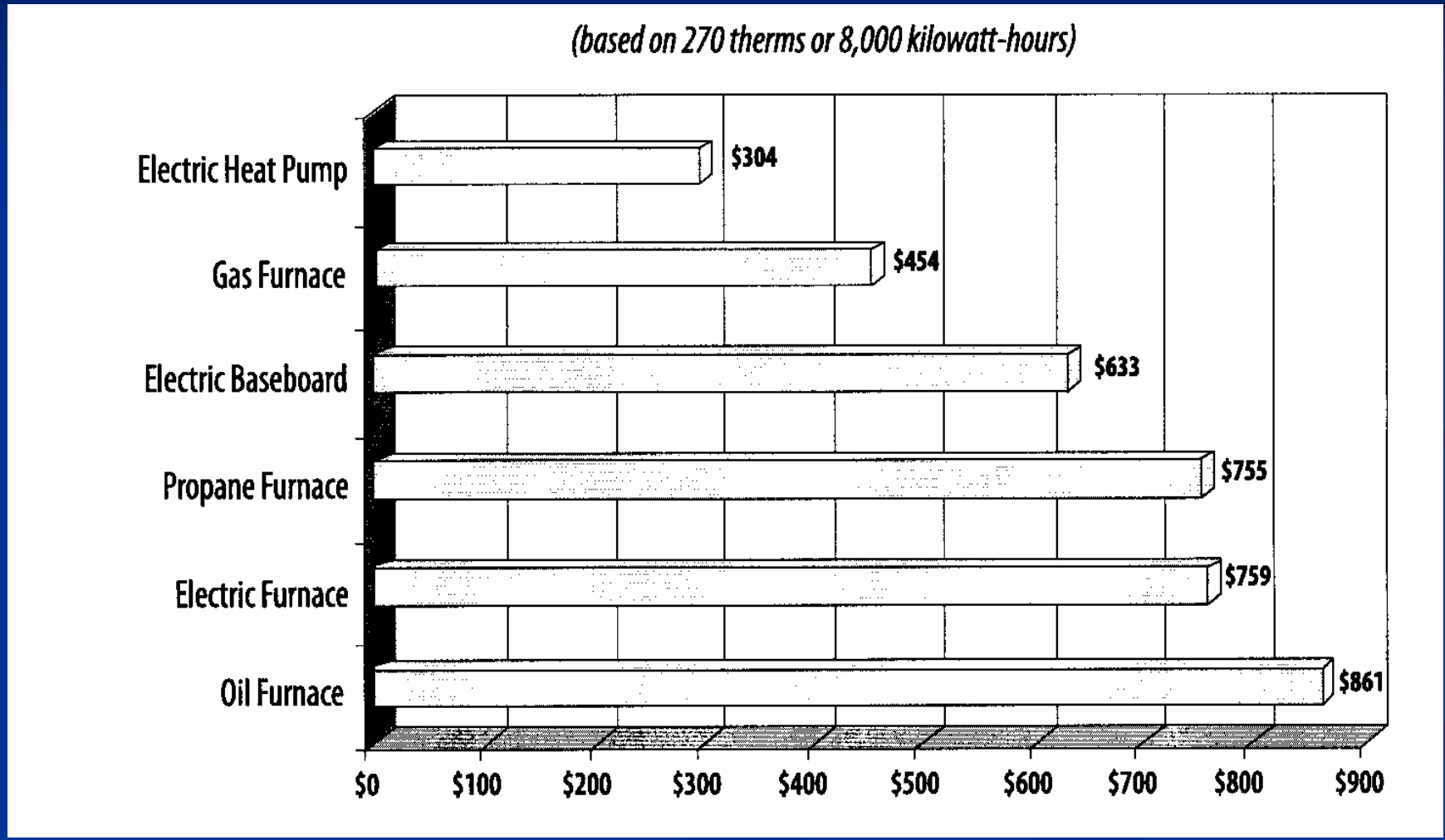
# Household Characteristics

- Multi-family homes as a percent of total homes will rise slightly
- 90% percent of new single-family homes will be built with non-electric heat sources
- New home electronic devices will increase kWh / household by 5% over next ten years (11% over next twenty years)
- Share of household income spent on electricity will fall from a little over 1% to below 1%



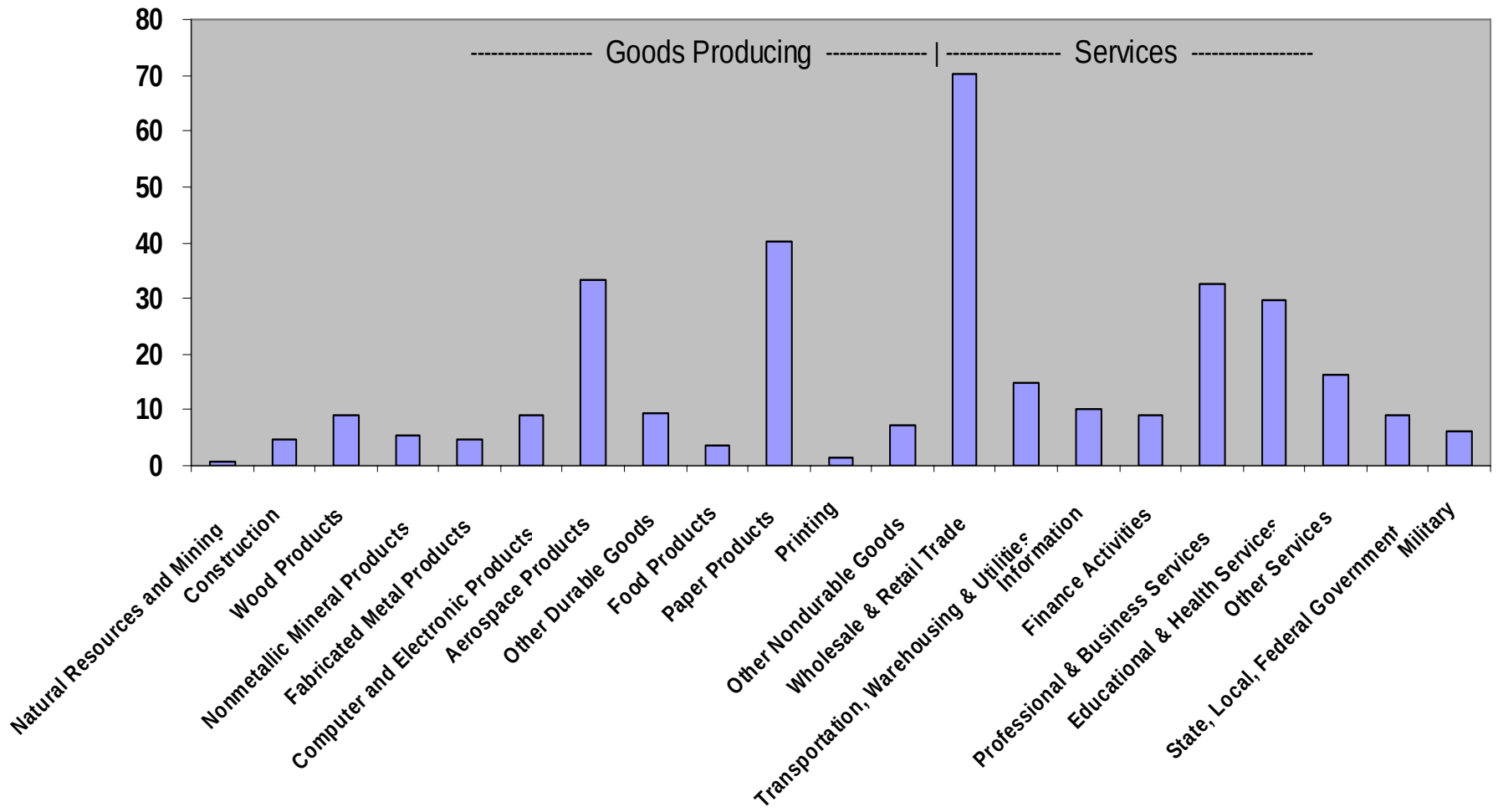



# Heating Fuel Cost Comparison



# Commercial and Industrial Load Types

## 2006 Average MW

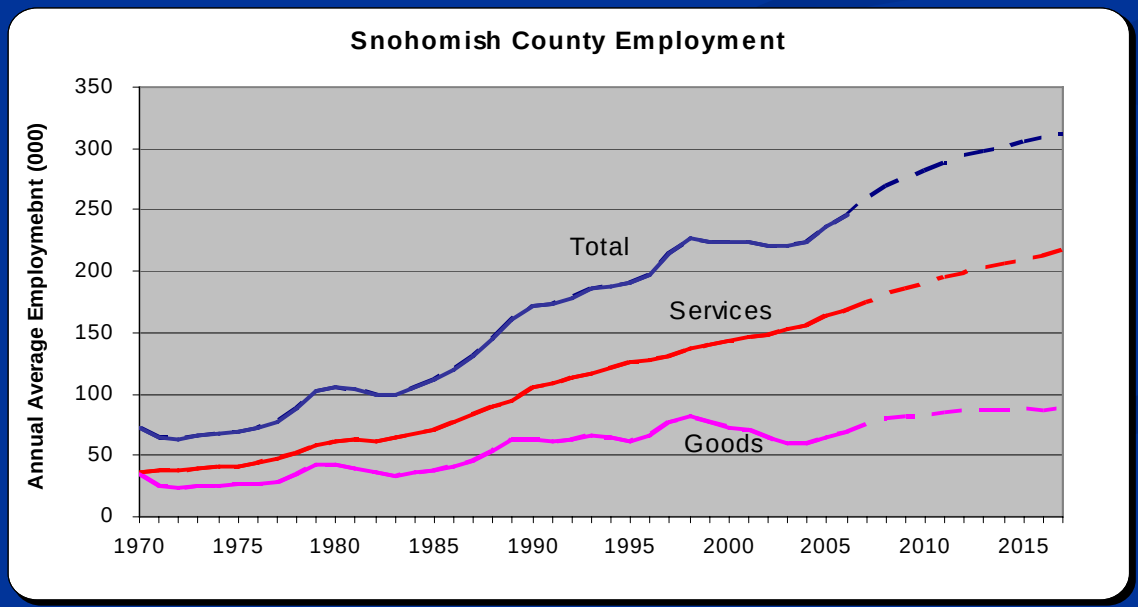


# Key Customers

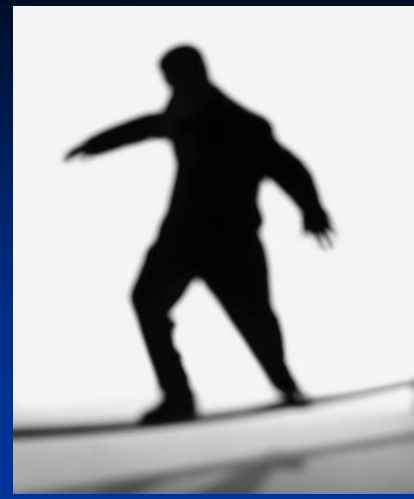
- **Boeing** -- Builder of Dreamliner 787
  - **US Navy**--Home of Abraham Lincoln Aircraft Carrier
- **Kimberly** Clark--Global Leader in Health/Hygiene Products
  - **Goodrich**--Supplier to Aerospace & Defense Industries
- **Intermec**--Leader in Automated Information & Data Tracking
  - **Fluke**--Manufacturer of Electronic Test & Measuring Tools
- **Philips Medical**--Imaging & Patient Monitoring
  - **Immunex**--Biopharmaceutical Protecting Human Health

# Employment Growth

- Goods producing employment will grow by 18,000 jobs over next 10 years; service jobs will grow by 49,000
- Largest goods producing job gains in construction and aerospace
- Largest service job gains in wholesale and retail trade, financial services, professional & business services, and education & health services



# Risk Factors



- U.S. and/or Puget Sound recession:
  Net 22% of income earned by Snohomish County residents is earned outside the county, primarily in King County (greater Seattle area)
- Significant appreciation of US dollar. Washington State and Puget Sound area depend heavily on exports.
- Portable plug-in heaters in non-electric heat homes can suddenly raise winter loads
- Air conditioning, portable as well as built-in units, can suddenly raise summer loads.

# I-937 & SB-6001 Considerations

- I-937 requires utilities to implement all cost-effective conservation measures.
- I-937 requires utilities to use renewable resources to serve a percentage of load:
  - 3% in 2012
  - 9% in 2016
  - 15% in 2020

- Not all types of renewable resources qualify under I-937
- SB-6001 limits fossil resource options

# Sno-PUD's Conservation Efforts

- Long history of program operation
- 3% Revenues for Public Purpose
- Currently assessing service area potential and evaluating programs
- Expect to meet at least 6 aMW a year of load growth using conservation
- Accelerate retrofit; increase penetration in new construction

# Conservation Portfolio

- **Residential**
  - Energy Star appliance, lighting rebates
  - Refrigerator recycling
  - Low income programs
  - Weatherization, heat pump loans and incentives

- **Commercial & Industrial**
  - Incentives for retrofit and new construction
  - Sustainable Schools project
  - PowerTrend – online billing information tool
- **Planned for 2008**
  - Multifamily new construction & retrofit incentives
  - Expand New Construction incentives
  - Small Business prescriptive initiative

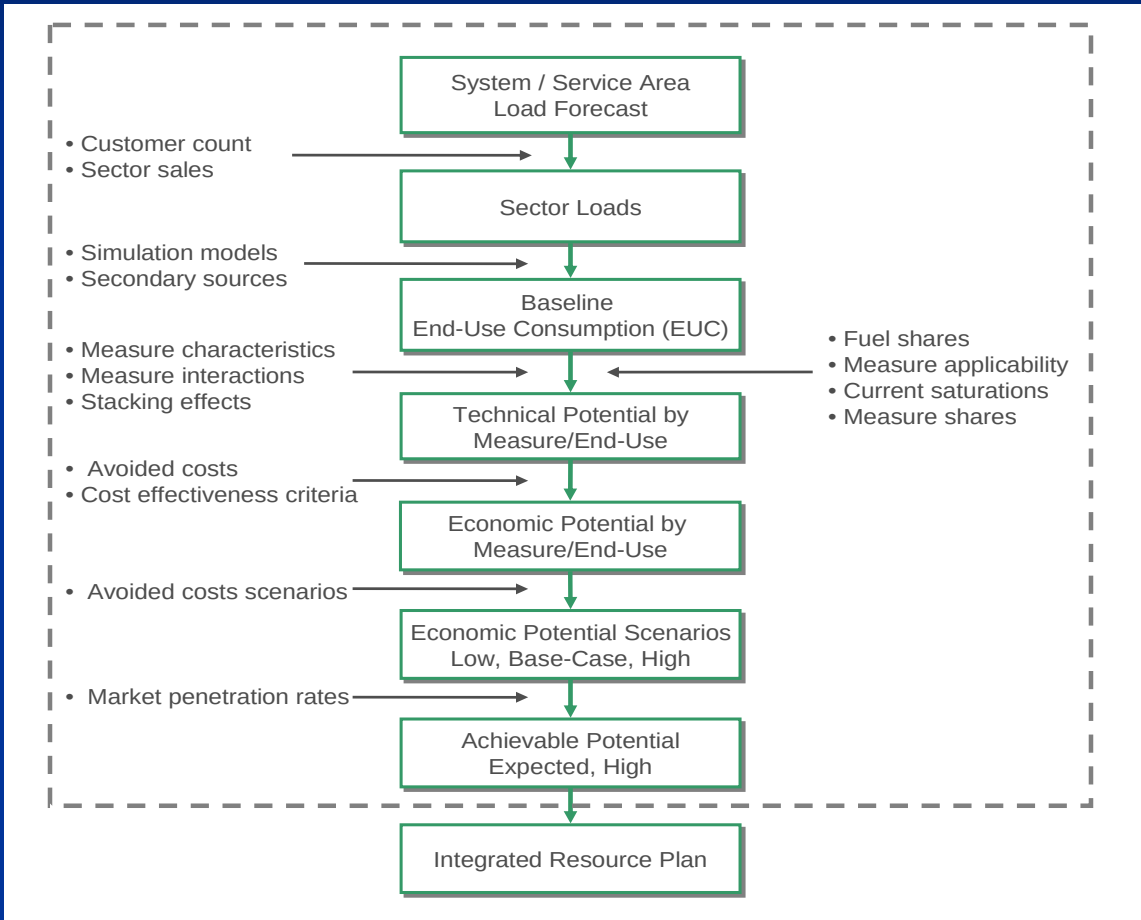
ENERGY STAR PARTNER

# IRP Planning for DSM

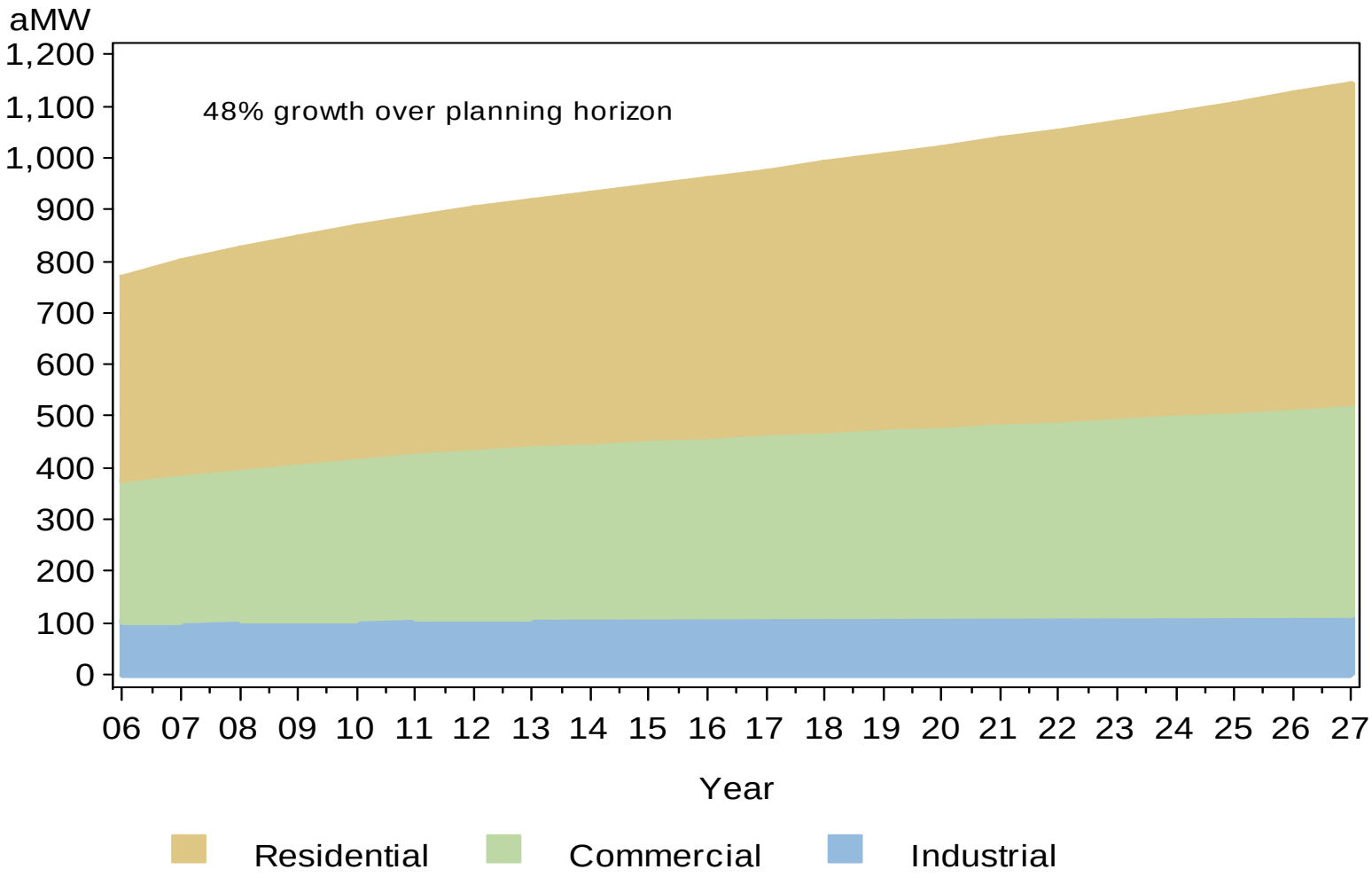
Two-phase effort -

- **Phase I: Potential Assessment**
  - Assessment of technical and economic potential
  - Plan for Phase II
  - Complete the commercial market assessment
- **Phase II:**
  - Update the results for the commercial sector
  - Estimate achievable potential
  - Resource interactions with DR
  - Policy and planning implications

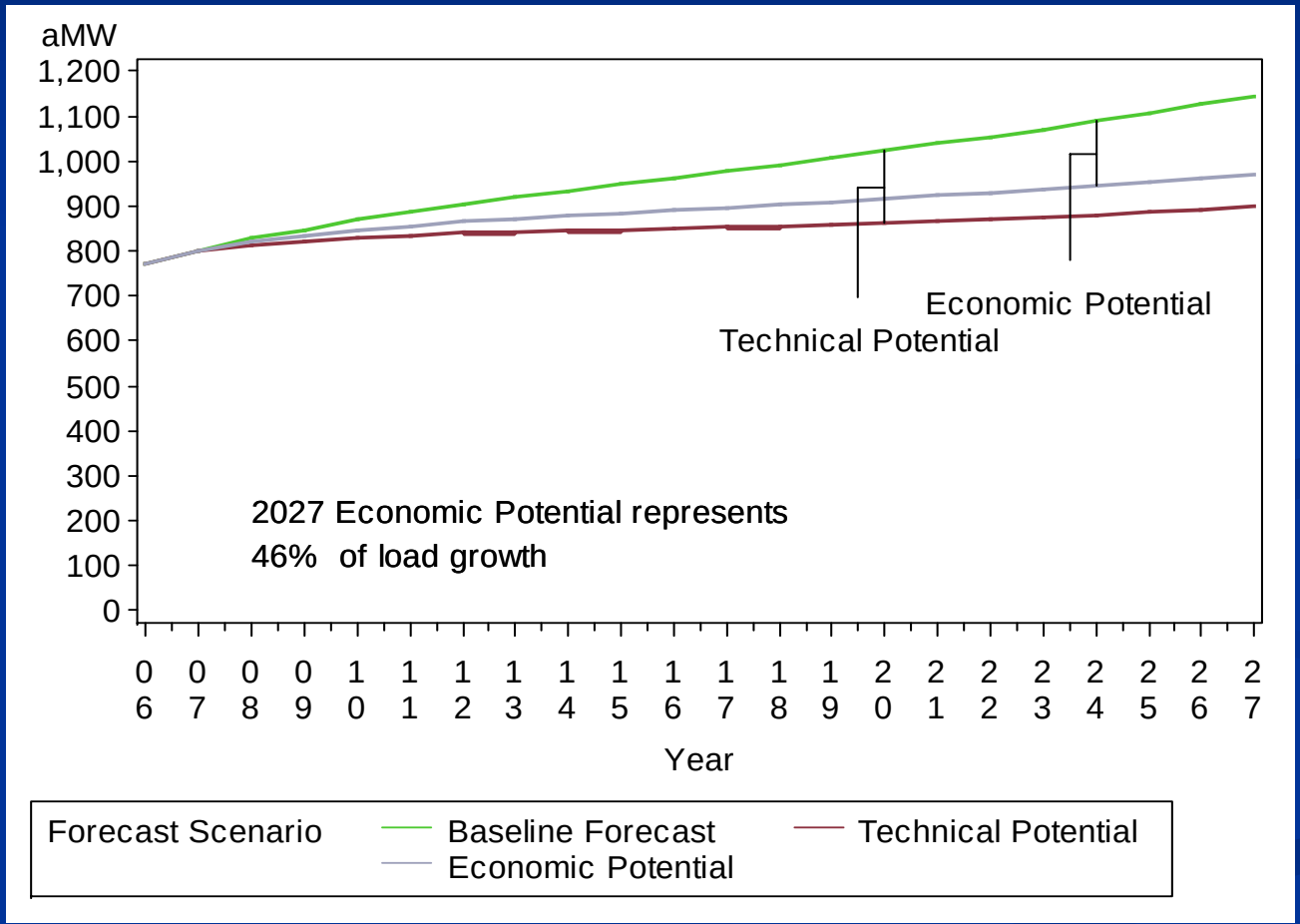
# Arriving at Achievable Potential



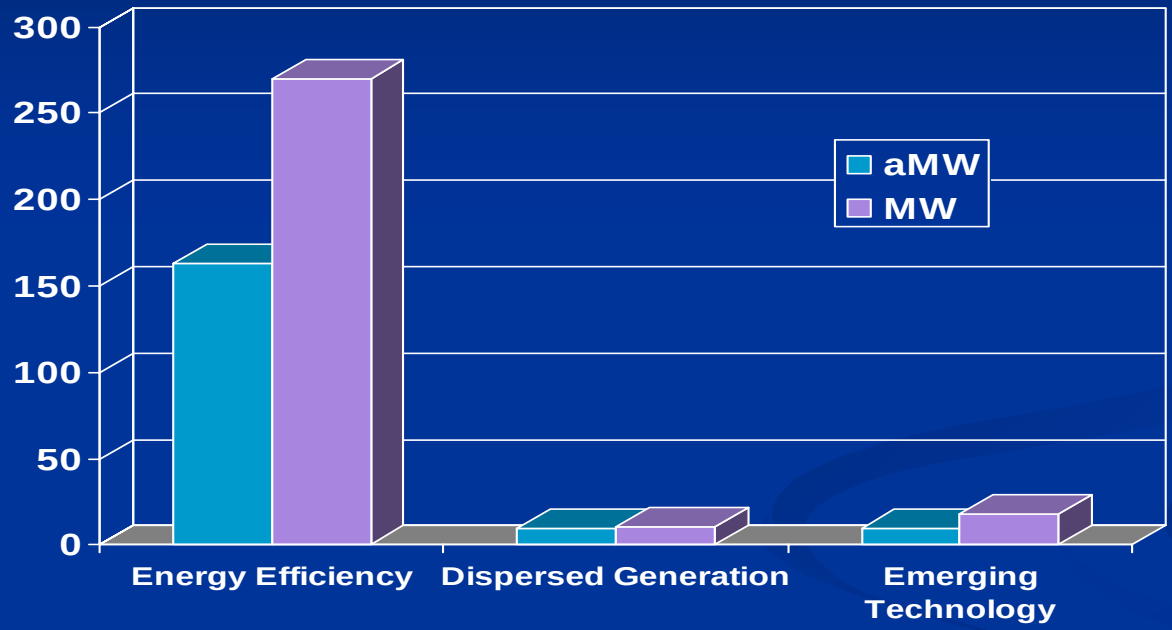
# Baseline Long-term Load Forecast By Sector



# Demand-Side Contribution



# Cumulative 20-year Demand-Side Resource Potential

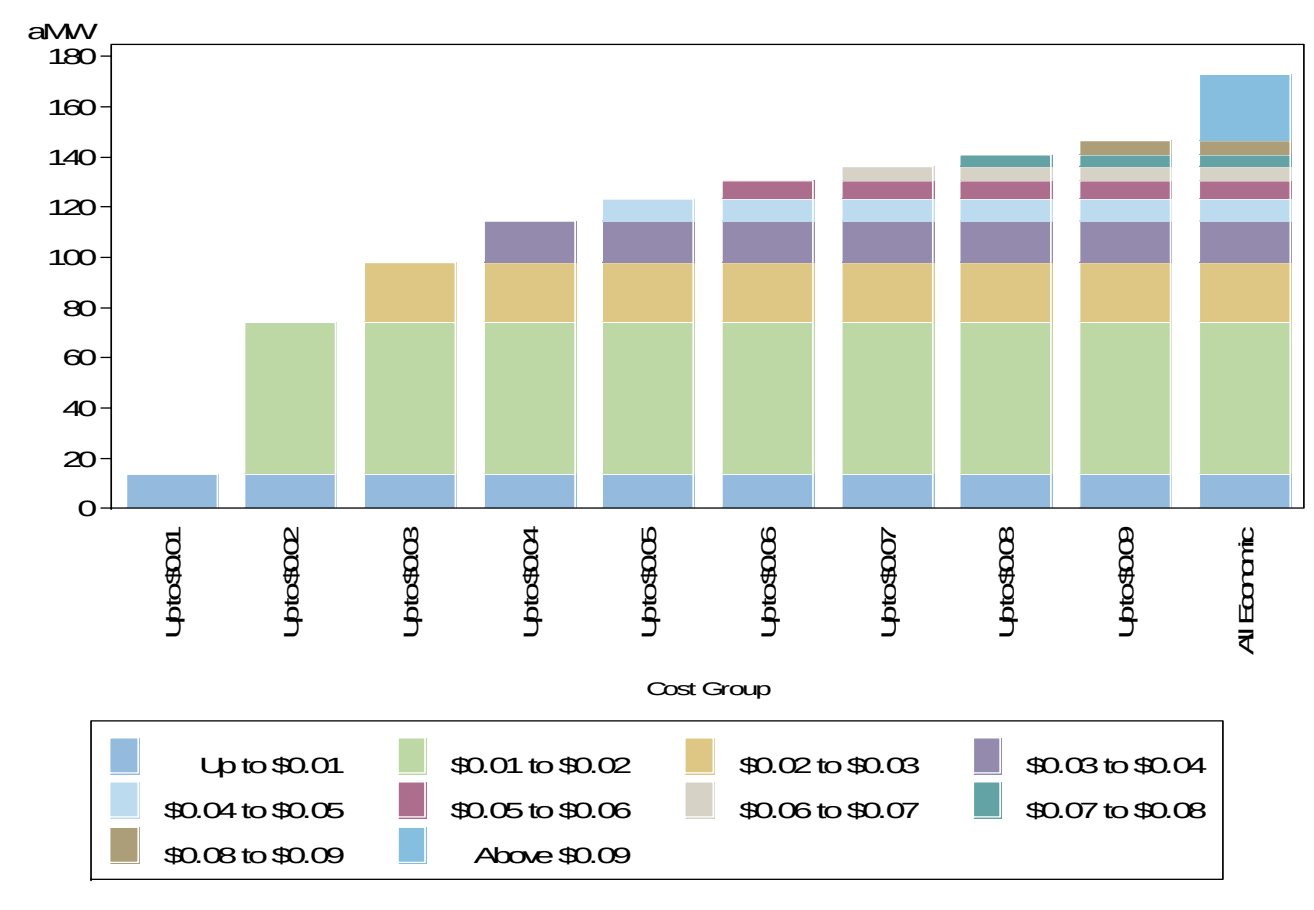



- **Economic potential for DS resources represent:**
  - Cumulative savings of 183 aMW - and 297 MW in system peak hour
  - 16% of sales and 16% of system peak demand
  - 58% of load growth from 2008-2027

# Energy Efficiency Resource Potential: Summary Of Results

| Sector | Baseline Sales | Technical Potential | Economic Potential | "EP" % of Baseline Sales |
|---|---|---|---|---|
| Residential | 622 | 132 | 88 | 14.1% |
| Commercial | 408 | 103 | 73 | 17.9% |
| Industrial | 114 | 12 | 12 | 10.5% |
| Total | 1,144 | 247 | 173 | 15.1% |

# Economic Potential - Supply Curve



# Next Steps – Phase II

- Estimate achievable potentials
- Alternative futures
- Resource acquisition schedule and ramping
- Analysis of programmatic gaps

# DSM Resource Potential: Implications

- **2027 Total Economic Potential:**
  - 183 aMW (16% of 2027 sales; 58% of 2008-2027 load growth)
  - Average annual potential - 8.65 aMW
- **2020 Achievable* Potential:**
  - 141 aMW (13% of 2020 sales; 66% of 2008-2020 load growth)
  - Average annual potential - nearly 12 aMW

* assumes acquiring 85% of all discretionary and lost opportunity resources

# Procurement Activities Underway

- **Conservation is #1 Resource**
- **Hampton Biomass Project**
  - 7 MW,  Online January 2007
  - Right of first refusal for green tags
- **White Creek Wind Project**
  - 20 MW,  Final contract Summer 2007
  - Contract includes green tags
- **Renewables - Request for Proposals**
  - RFP issued Summer 2007,  Responses due this fall
  - Seeking projects up to 100MW
  - I-937 eligible renewables