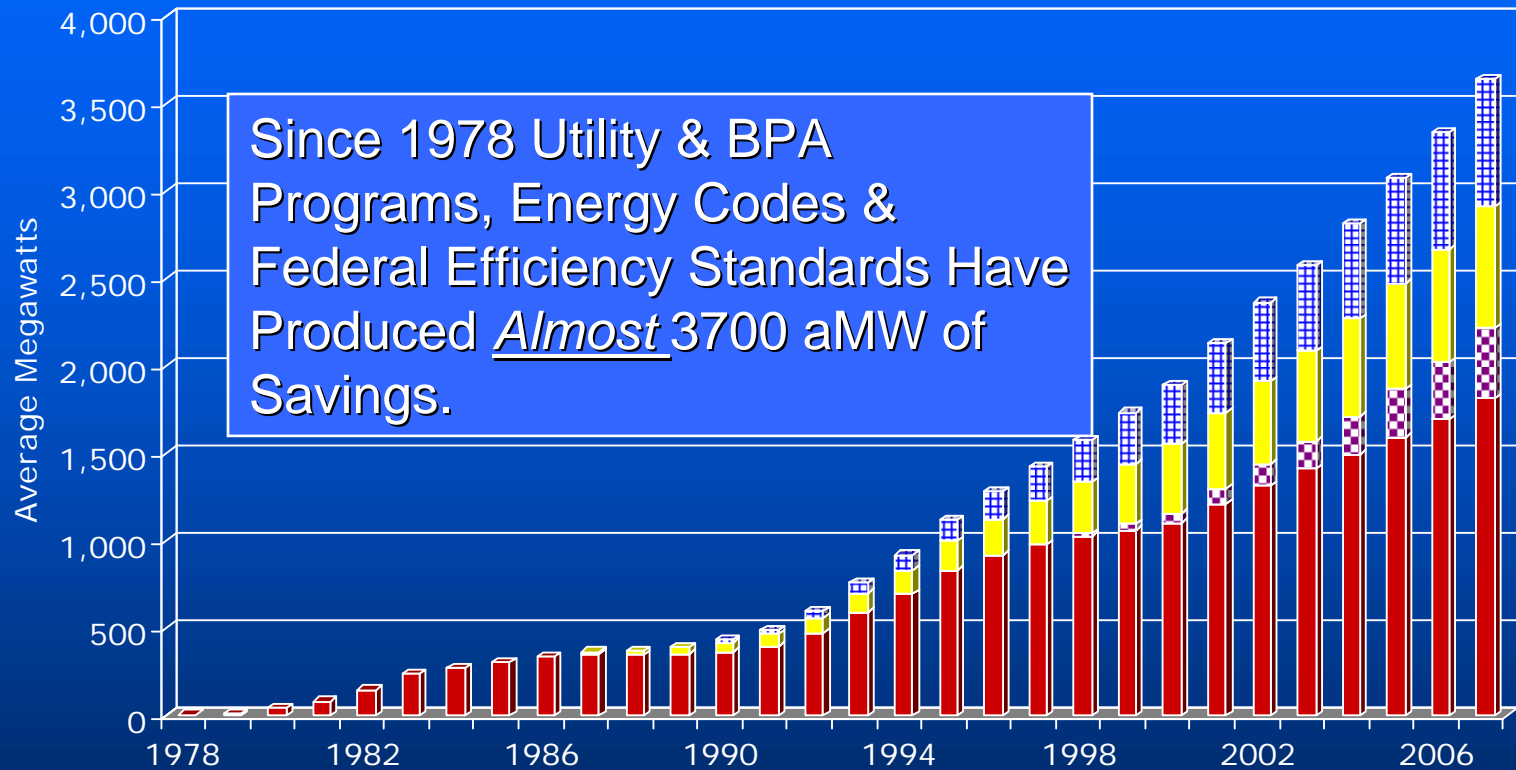


# NW Regional Conservation Potential: Moving from the Fifth Power Plan to the 6th

Presentation to NEEA Energy Efficiency  
Roundtable

October 28, 2008

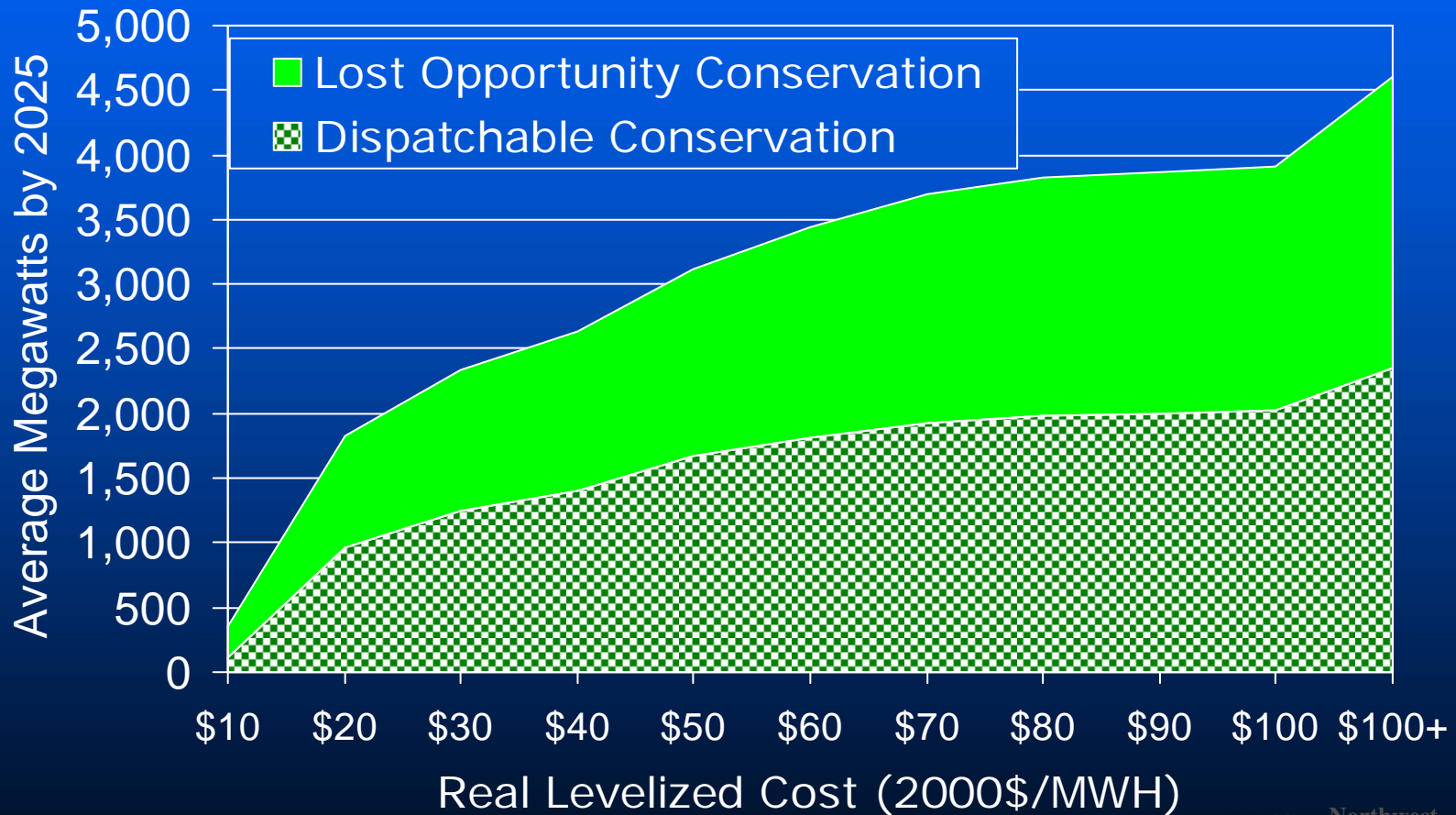
# To know where you're going....



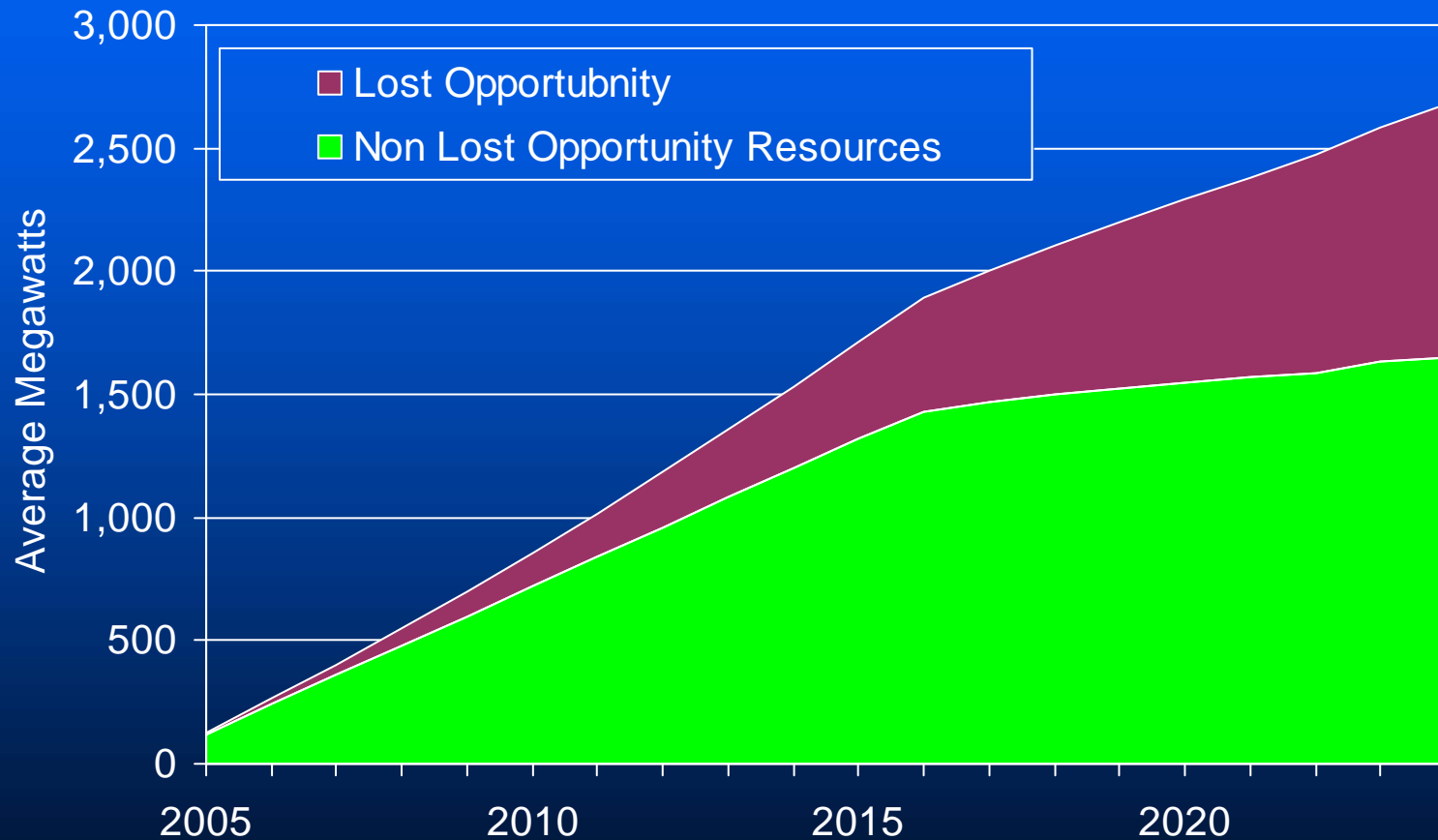
■ BPA and Utility Programs   ■ Alliance Programs   ■ State Codes   ■ Federal Standards

... It helps to know where you've been.

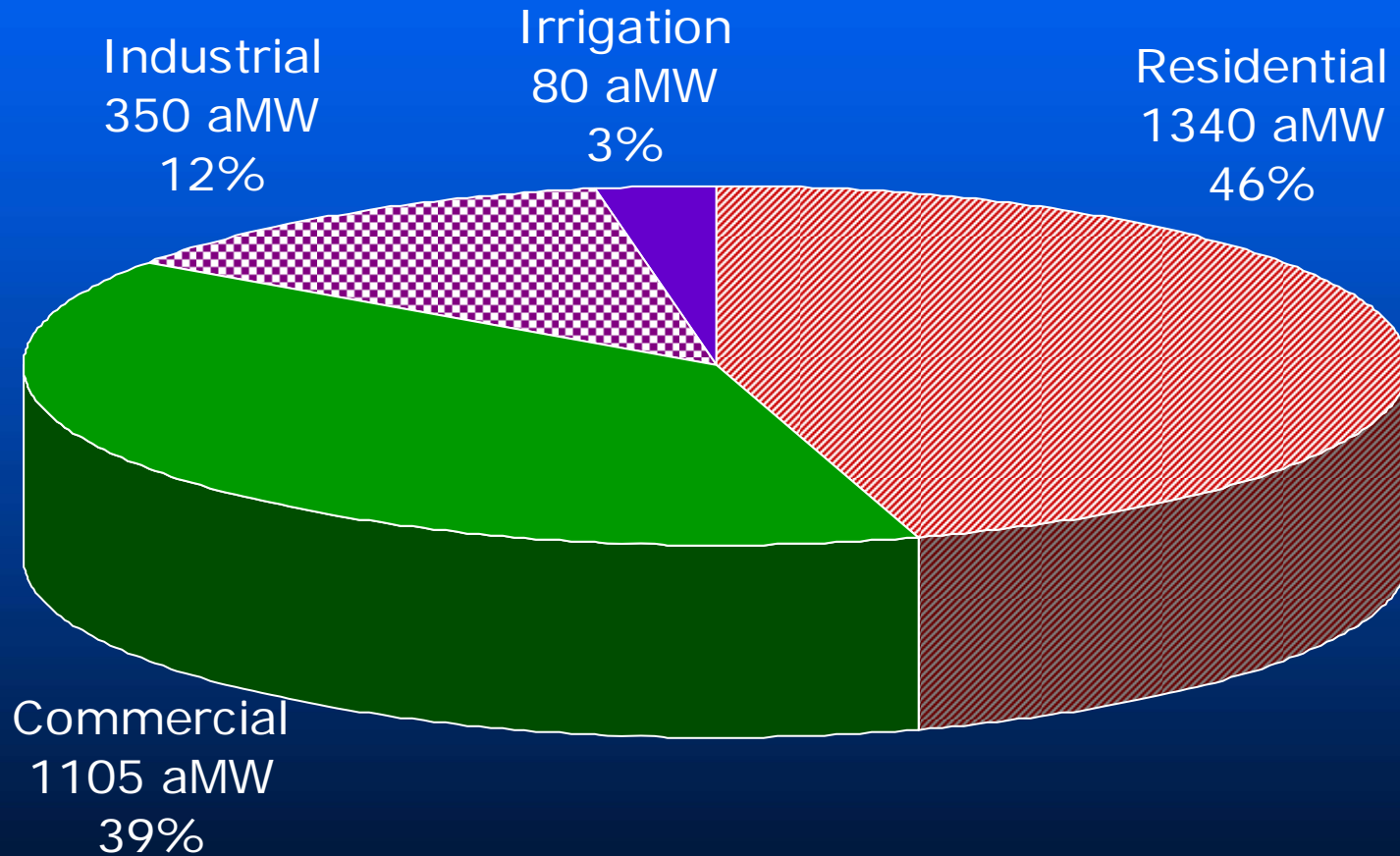
# 5<sup>th</sup> Plan Identified Nearly 4,600 MWa of "Technically Available" Conservation Potential



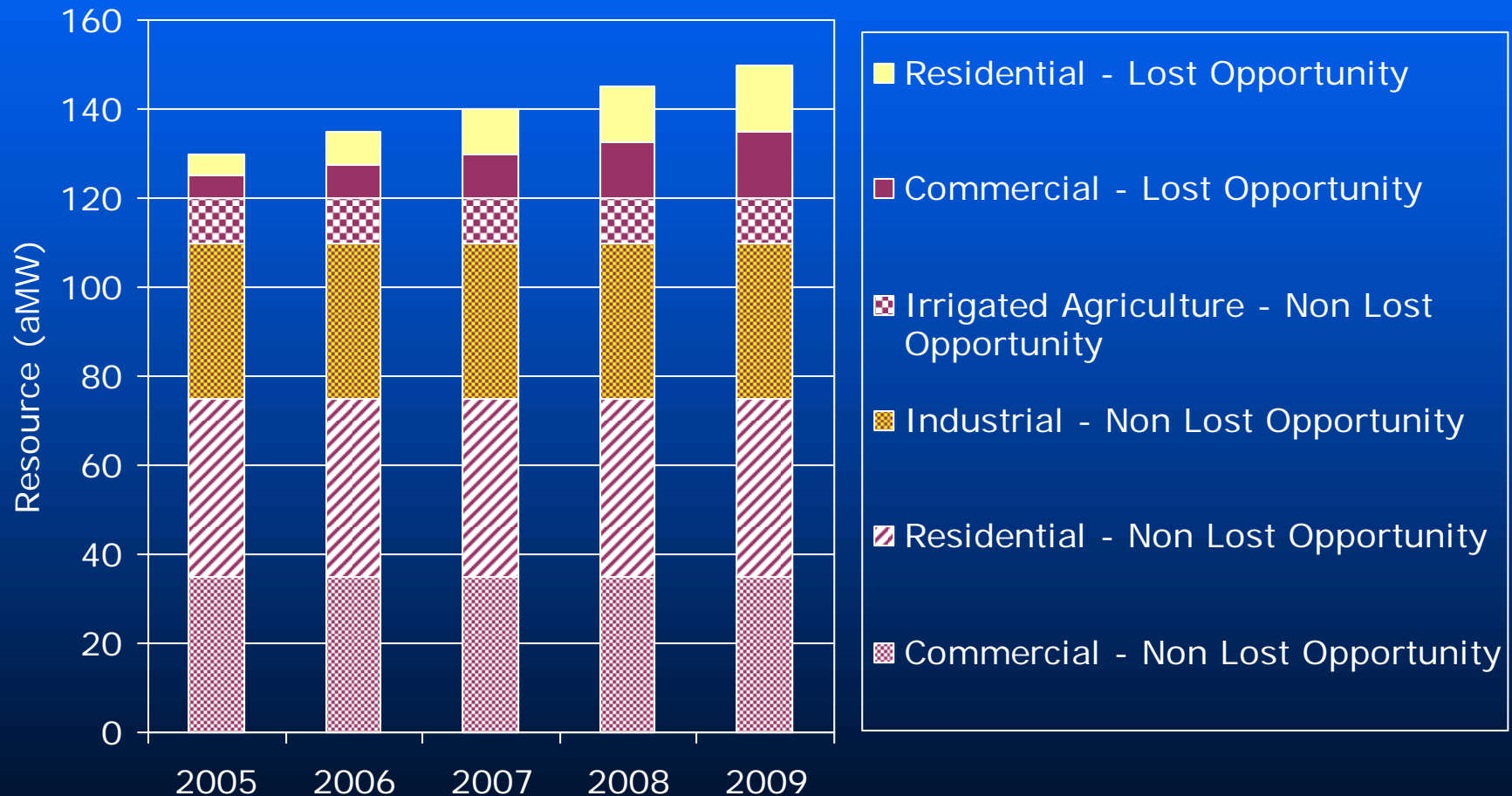
# 5<sup>th</sup> Plan Targeted 2700 MWa Over 20 Years



# Cost-Effective Savings by Sector



# 5th Plan's Five Year Target Is 700 MWa



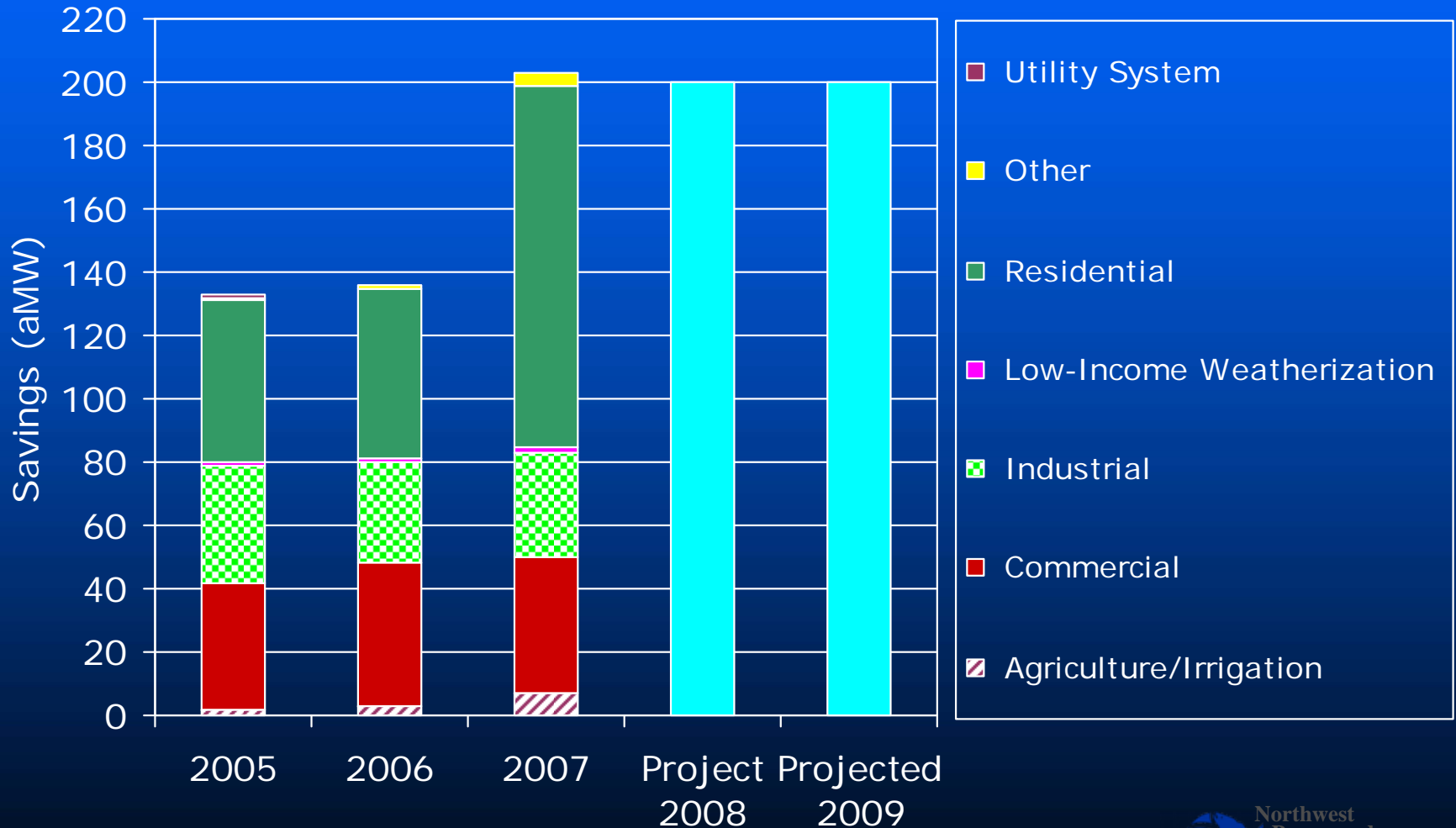
# Moving from the 5<sup>th</sup> Plan to the 6<sup>th</sup>:

## Adjustments to 5th Plan's Conservation Resource Potential

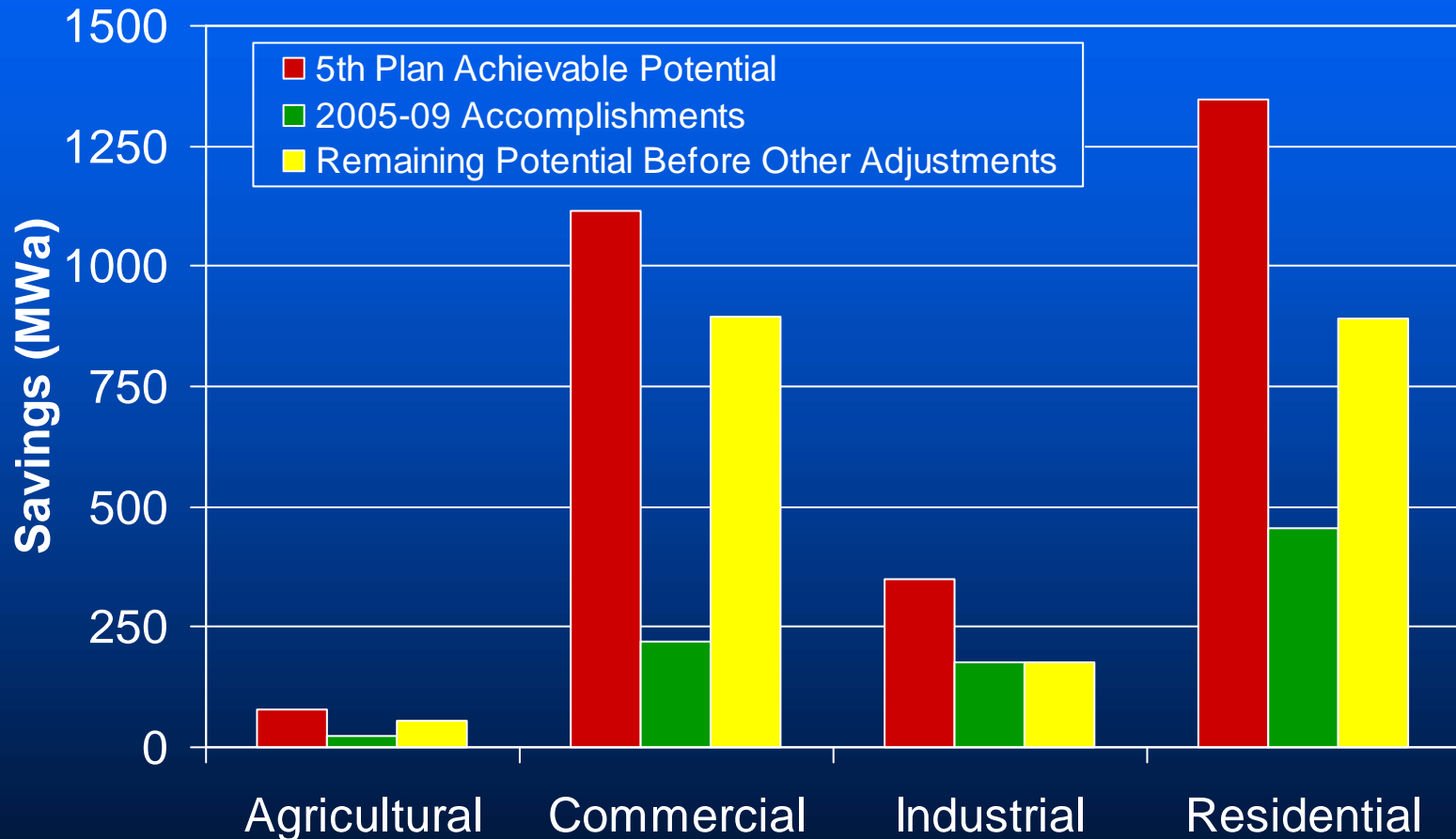
1. Achievements 2005-2009
2. State energy code changes
3. Federal standards
4. Changes in current practice "baseline"
5. Shifts in best available technology
6. New resources
7. Expanded existing resource potential
8. Emerging technologies

# Adjustment 1

## Utility Conservation Achievements – 475 MWa To Date + 400 MWa Projected



# Adjustment 1: 2005-2009 Accomplishments



# Adjustment 2 – State Codes

- Idaho – Adopted 2006 Edition of International Energy Conservation Code (IECC) effective on Jan 1, 2008
  - Residential & Commercial
- Montana – Adopted 2004 Edition of International Energy Conservation Code effective on Jan 1, 2006
  - Consider adopting 2006 IECC in Summer 2008
- Oregon – Adopted Revised Residential Code effective July 1, 2008
  - Improve residential efficiency approximately 15% over prior code
  - Slight revision in commercial
- Washington – Revised code became effective July 1, 2007
  - Improve residential efficiency approximately 10% over prior code
  - Significant improvements in commercial lighting & envelope
- Seattle - Improvements in commercial code for economizers in 2006

# Adjustment 3 – Federal Standards

- Energy Independence and Security Act (EISA) of 2007
  - Residential Lighting largest adjustment
    - » 625 MWa in 5<sup>th</sup> Plan, 70% - 80% captured by new federal standards (and market momentum)
  - Additional Adjustments for New Standards
    - » External power supplies
    - » Commercial clothes washers
    - » Commercial ice-makers
    - » Electric Motors

# Adjustment 3 – Federal Standards (cont)

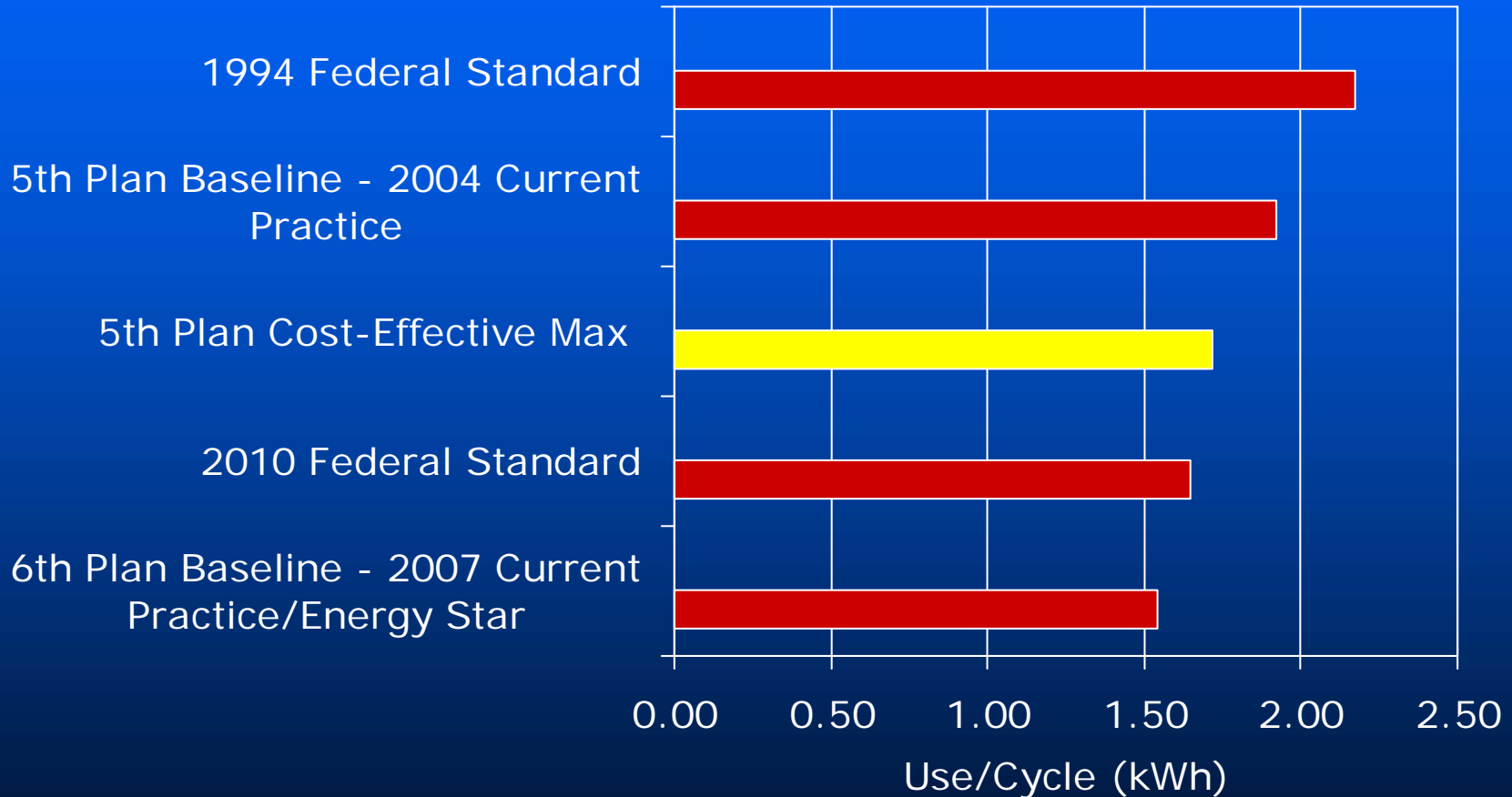
## ■ Additional Adjustments

- » Distribution Transformers (medium voltage, dry-type and liquid immersed)
- » Commercial heat pumps and air-conditioners
- » Commercial refrigerators
- » Single-Package Vertical Air Conditioners and Heat Pumps
- » Walk-In Coolers and Walk-In Freezers
- » Fluorescent Lamp Ballasts
- » Metal Halide Lamp Fixtures

# Adjustment 3 – Federal Standards (cont)

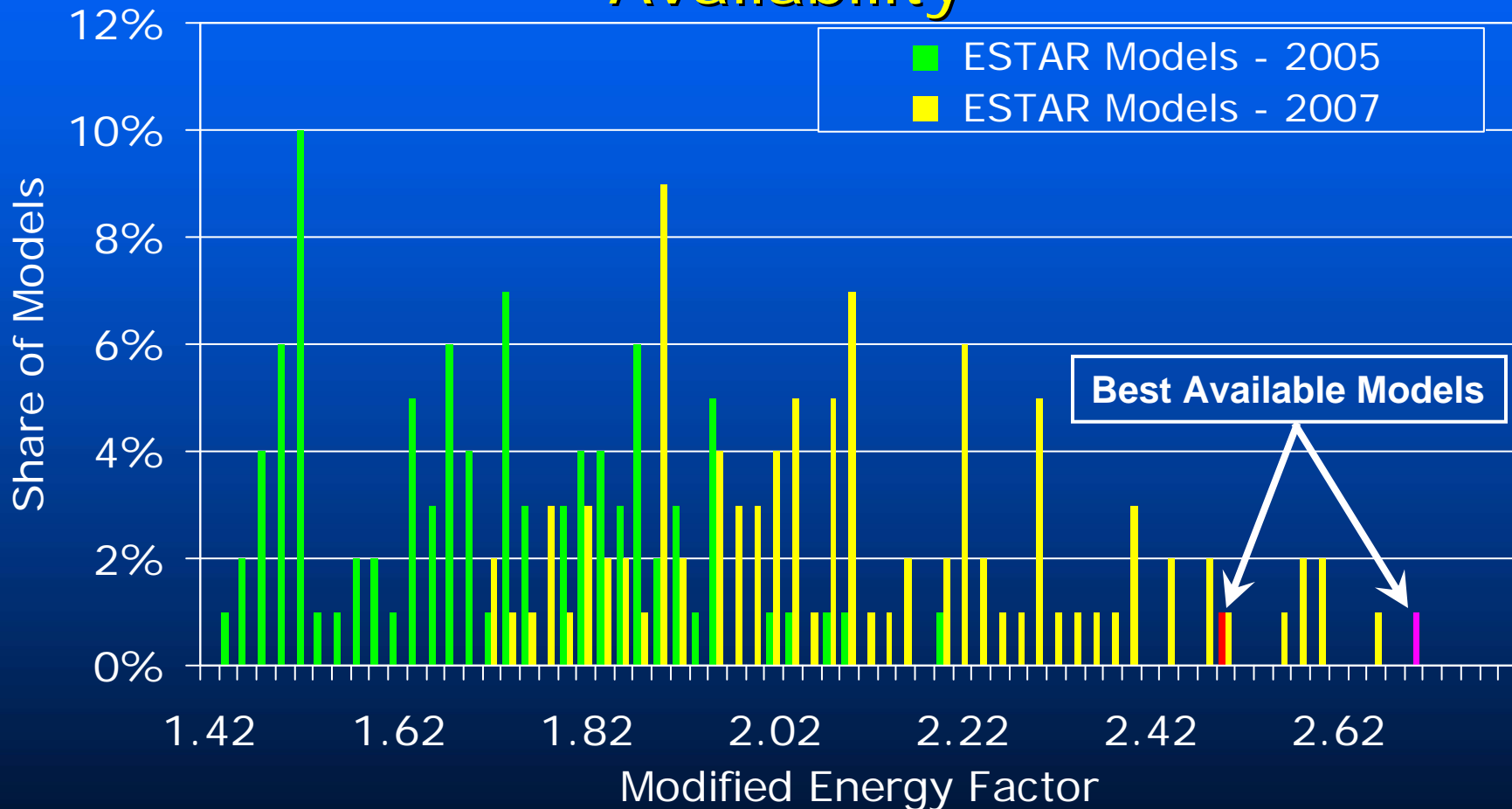
- Additional Potential Adjustments Standards Under Revision
  - Battery chargers and external power supplies
  - Residential Clothes Dryers
  - Commercial and Residential Clothes Washers
  - Residential Dishwashers
  - Pool heaters
  - Residential Ranges, Ovens and Microwaves
  - Beverage Vending Machines
  - Residential Central Air Conditioners and Heat Pumps
  - Residential Furnace Fans
  - Commercial and Residential Refrigerators and Freezers
  - Room Air Conditioners
  - Walk-in Coolers and Freezers
  - Fluorescent lamps and ballasts
  - Residential Water Heaters

# Adjustment 4 – Changes in “Current Practice” Example: Dishwasher



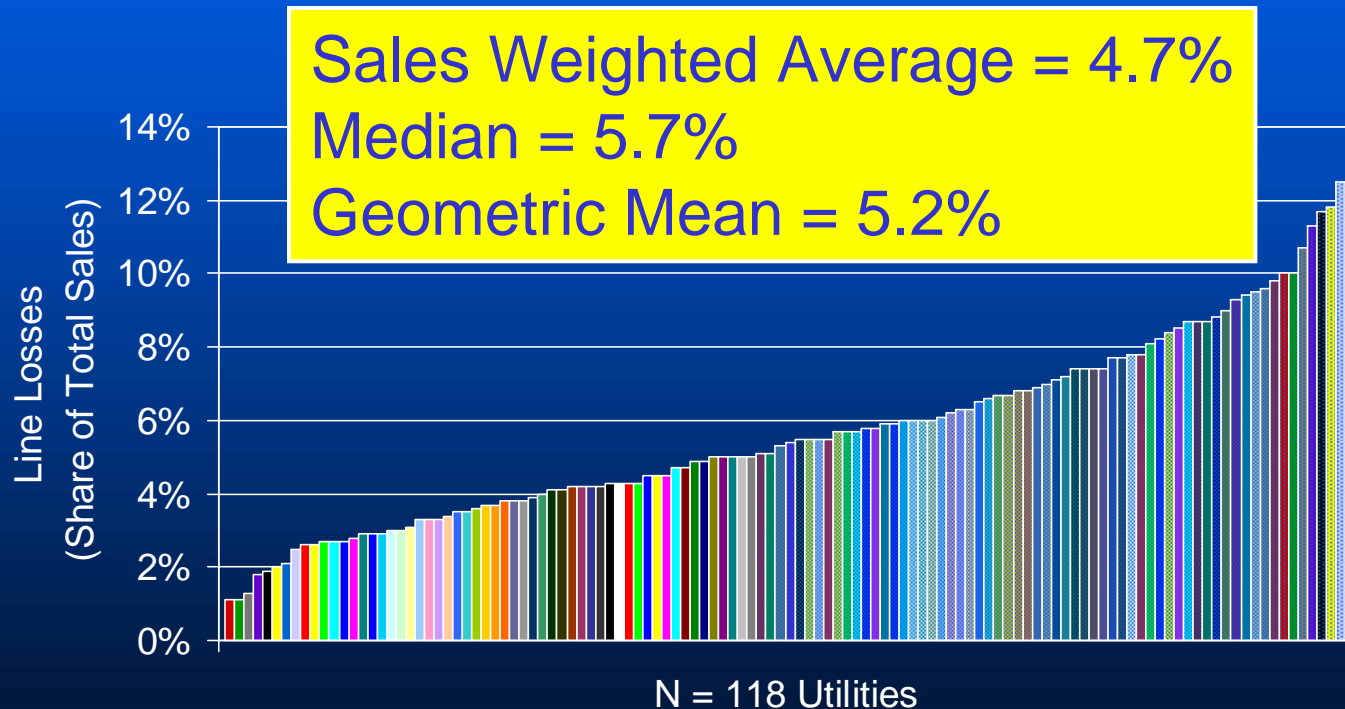
# Adjustment 5 – Best Available Technology Improvements

## Example - Energy Star Washer Product Availability



# Adjustment 6 - New Resource Potential – Distribution Efficiency

- Act's Definition of Conservation includes improvements in the efficiency of production, distribution and use



# New Resource Potential for Utility Distribution Efficiency Improvements

- NEEA contracted with RW Beck to assess the potential savings from improved distribution system efficiency upgrades
- Study concluded that regional energy savings could be between 1%-3% of regional loads at at cost up to \$70/MWH
  - Also concluded demand savings could be between 3% - 3.5% of system peak demand
- ***At current system loads, regional savings potential = 400 – 600 MWa***

# Adjustment 7 - Expanded Resource Potential – Industrial Sector

- 5<sup>th</sup> Plan Estimated Industrial Conservation Potential at 5% of 2025 Loads = 350 MWa
- Viewed as “conservative” assessments of industrial potential
  - Other regional & national studies = 10-30%
- Council, with Bonneville support, undertaking more thorough regional assessment
- ***Anticipate Industrial Sector potential could increase to 600 – 1300 MWa (7% - 15% of sector sales)***

# Adjustment 8: Emerging Technologies

## *Findings in Three Categories*

Improvements to Existing Technology. Gains in cost, efficacy, applicability or measure life.

Improved Tech

Changes to Design & Business Practices: Systematic business strategies that improve measure applicability, penetration and persistence ... Design & Operations

New & Improved Practices

New Products & Technology. Breakthrough technologies not previously considered viable. Includes both direct and enabling technologies & products.

New Tech

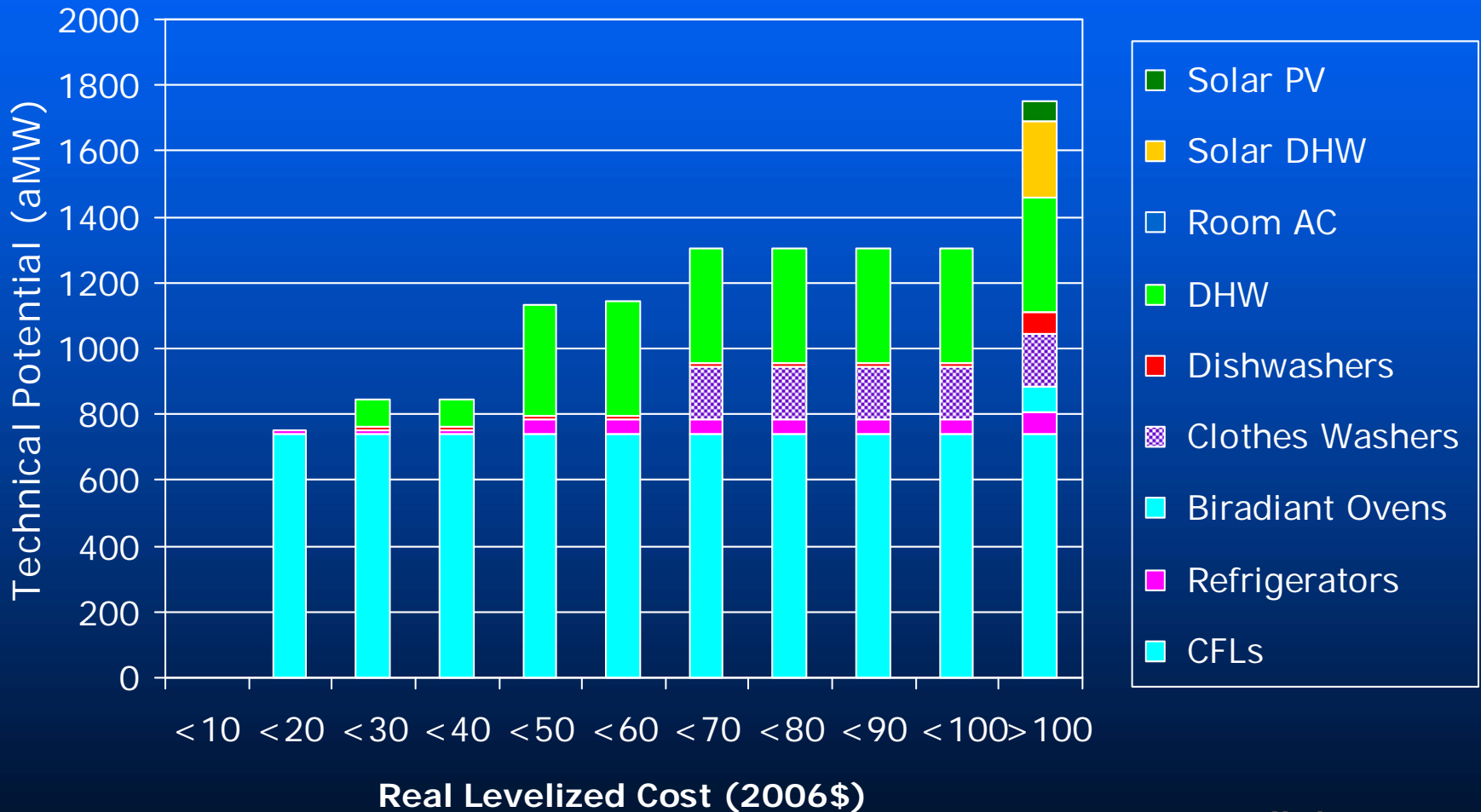
- Evaluating these technologies/practices for the 6<sup>th</sup> Plan
- Expand supply Curves for Commercially Available
- Identify Actions to Speed Up Commercial Readiness for Others

# Summary

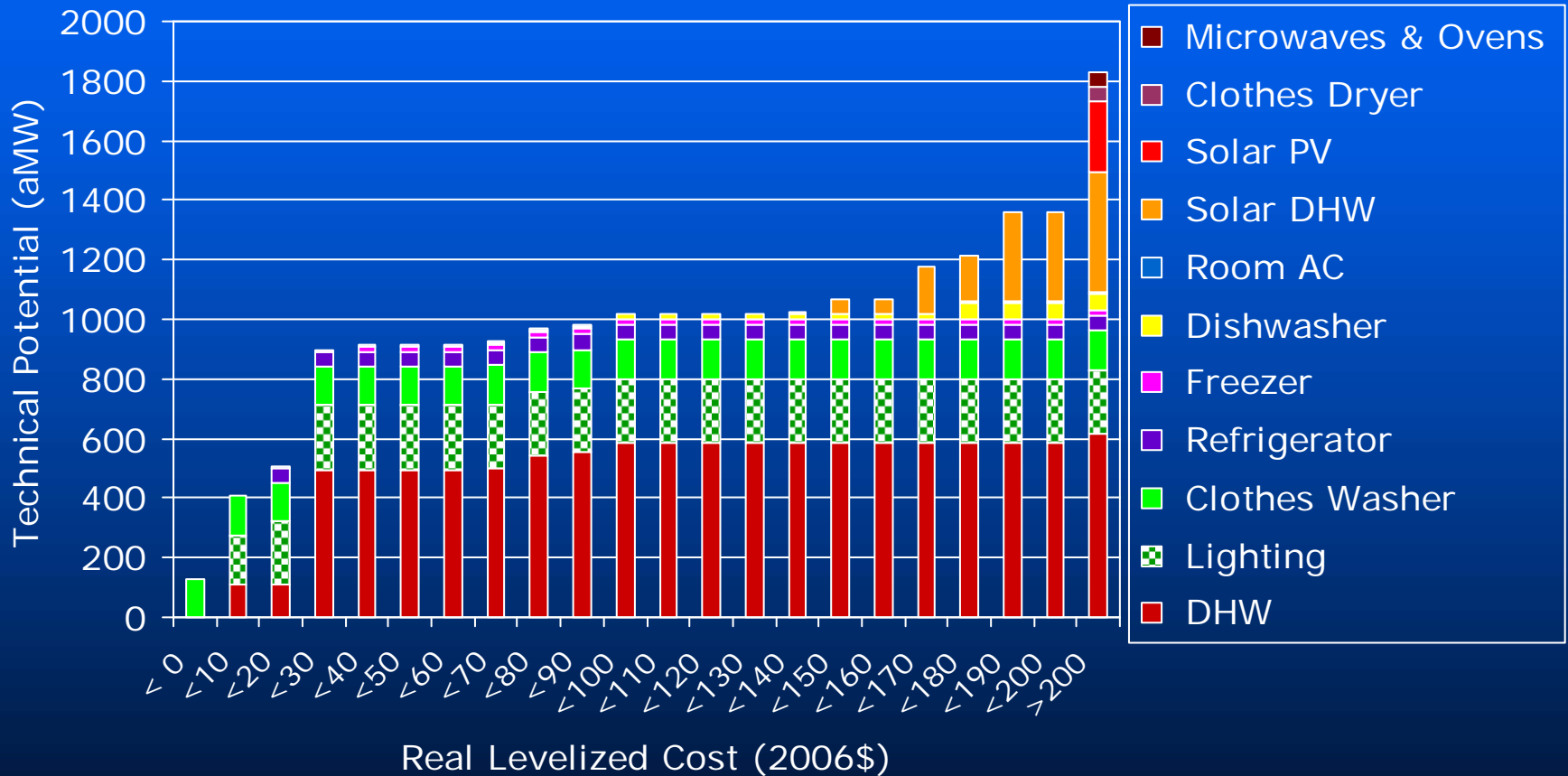
- Currently Quantified Major Adjustments to 5<sup>th</sup> Plan's Estimate of Achievable Conservation Potential
  - Reduced by 875 MWa for program accomplishments
  - Reduce by 450 – 500 MWa for impact of codes and standards
  - Increase by 400 – 600 MWa for Utility Distribution System Efficiency Improvements
  - Increase by 250 – 950 MWa for Industrial Sector Efficiency
  
- Change –
  - Decrease load forecast by 1335 – 1475 MWa
  - Increase achievable conservation potential by 650 – 1550 MWa
  - **Net conservation potential = 1985 – 3025 MWa**
  
- Stay Tuned –
  - Final supply curves still in development
  - Five-year goals yet to be established
  - Action Plan TBD

# Preview of New Potential Assessment for Residential and Commercial

# 5<sup>th</sup> Plan Residential Water Heating, Lighting and Appliance Supply Curve



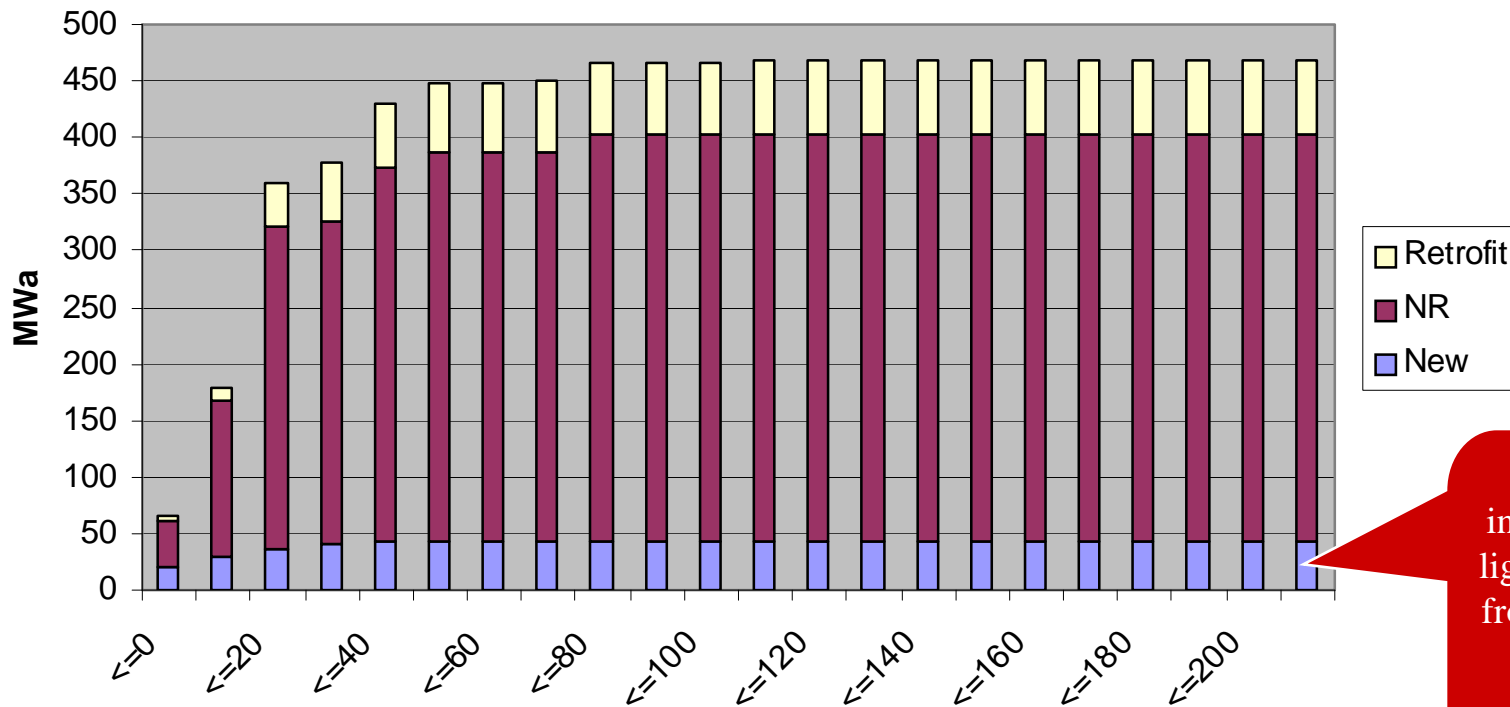
# 6<sup>th</sup> Plan Residential Water Heating, Lighting and Appliance Supply Curve\*



\*Preliminary – Subject to Revision!

# 6<sup>th</sup> Plan Preliminary Results for Commercial Lighting LPD Reductions

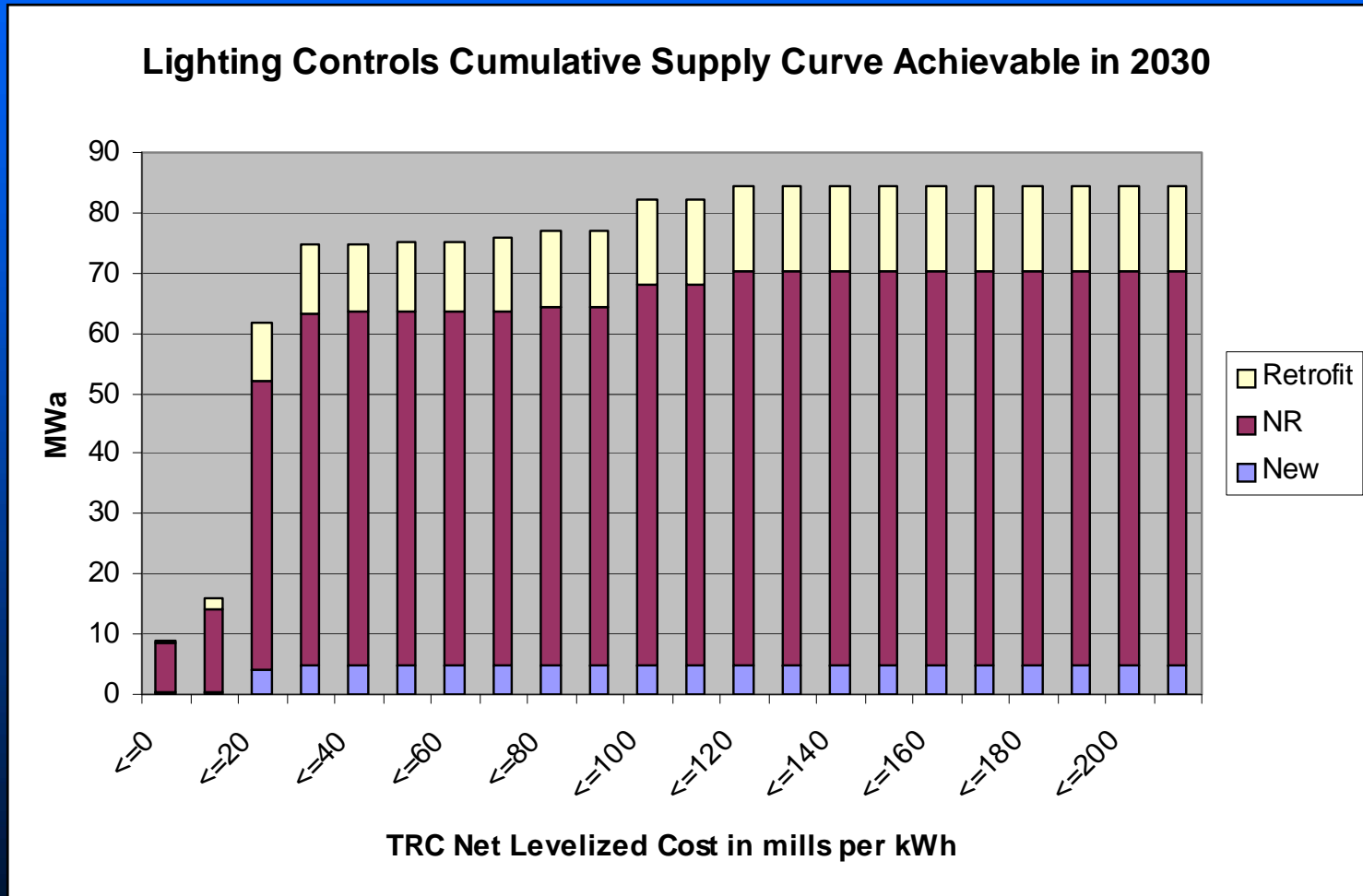
## LPD Reductions Cumulative Supply Curve of Achievable Savings in Commercial Buildings for 2030



Does not include similar lighting savings from Integrated Design measure.

- Over 500 MWa in 6<sup>th</sup> versus about 350 MWa in 5<sup>th</sup>
- New measures added exceed accomplishments

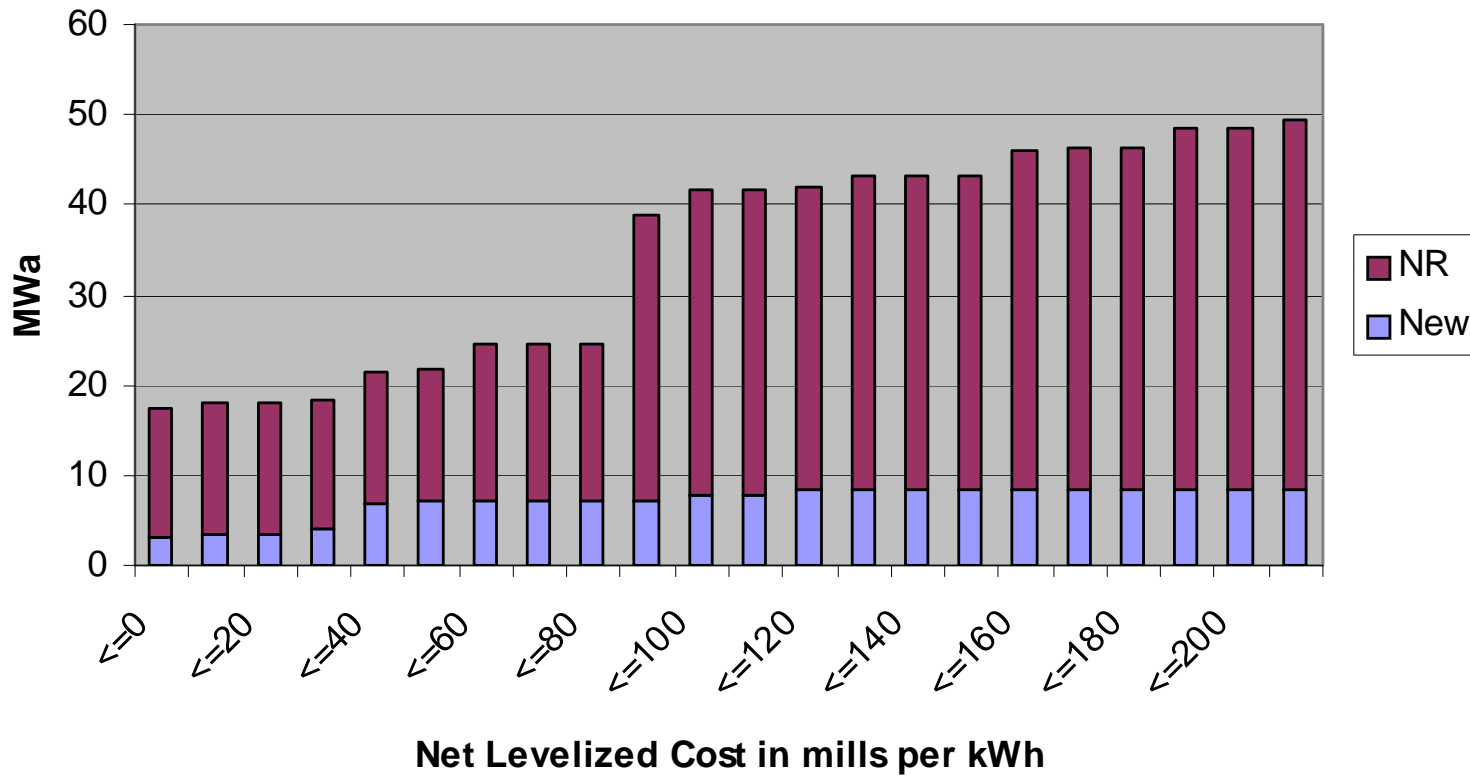
# 6<sup>th</sup> Power Plan Preliminary Results for Commercial Lighting Control Measures



These measures were not in the 5<sup>th</sup> Plan

# 6<sup>th</sup> Power Plan: Preliminary Assessment of SSL Streetlights

## Street Light Cumulative Supply Curve Achievable 2030



These measures were not in the 5<sup>th</sup> Plan