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April 29, 2010

MEMORANDUM

TO: Power Committee

FROM: Massoud Jourabchi

SUBJECT: Energy Savings from New Building Codes and Appliance Standards:
Residential Water Heaters

As a regular part of our monitoring of the power plan's assumptions and conservation implementation, staff periodically reviews and estimates the savings potential from new building codes and appliance standards. In the Power Committee's April 2010 meeting, Tom Eckman presented a historic perspective on Federal appliance standards.

In this meeting we will quantify the impact of existing federal standards, already built into the 6th Power Plan. Also, more importantly, we will estimate the savings from the new residential water-heater standards that would take effect by 2015. It should be noted that this new standard was not part of the forecast in the 6th Power Plan, so the level of savings estimated here can be treated as conservation achieved toward the Plan's targets.

As a result of higher national standards on residential water heaters, we expect an 11% reduction in electricity consumption by water-heaters. Over time, this improvement leads to over 200 MWa of energy savings in the region, and a reduction of winter peaks by 400 MW. We estimate that 50 MWa of savings can be expected by 2015.

This report should be treated as the first in a series of reports on savings from building codes and appliance standards. We hope to provide Council with estimates from commercial lighting and building codes in subsequent meetings, and as new federal standards are enacted we will incorporate their impact on the load forecast and the 6th Plan conservation targets.



Energy Savings from New Building Codes and Appliance Standards:

Residential Water Heaters

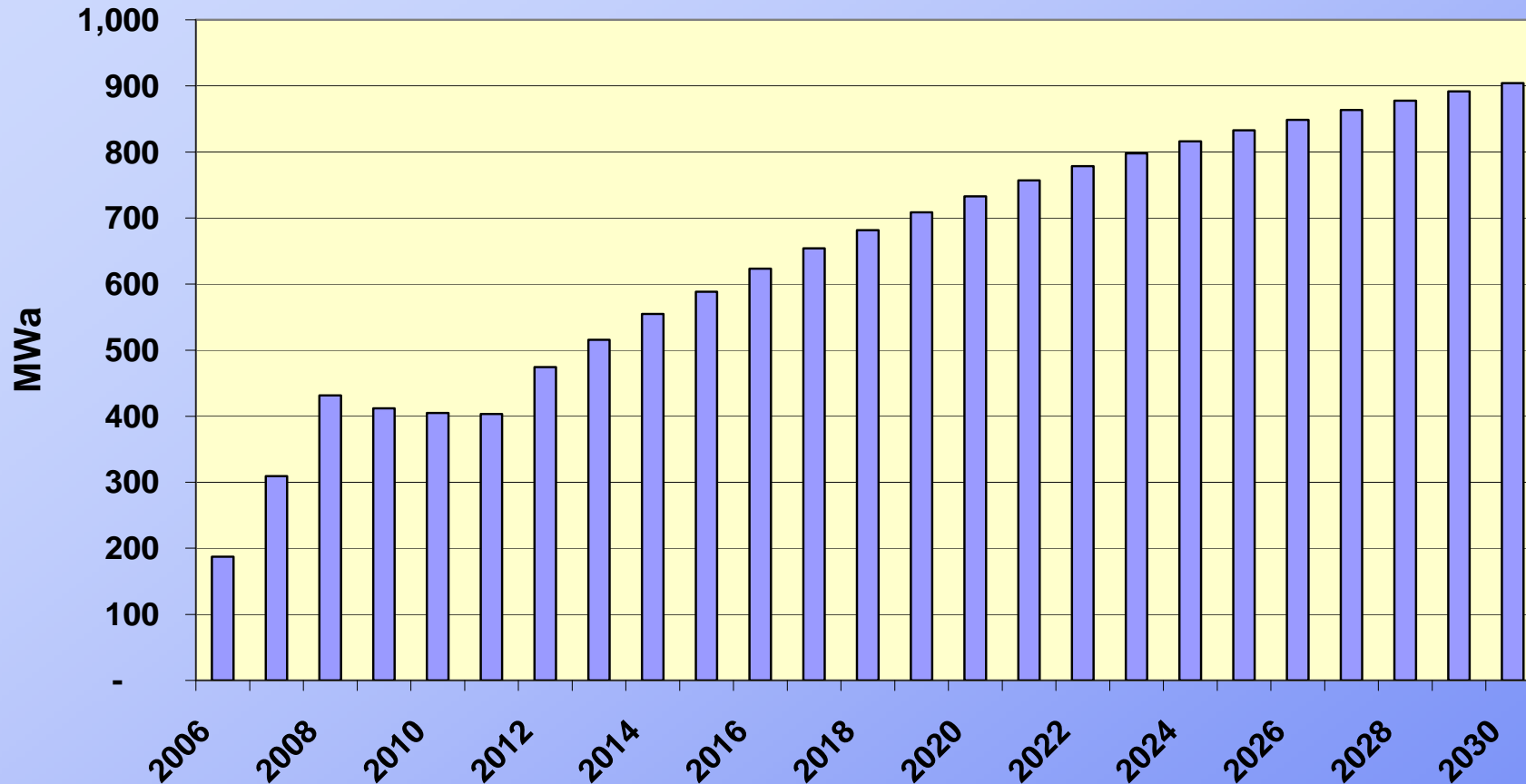
May 11-12, 2010

Massoud Jourabchi

In Today's Presentation

- Assessment of past standards, impacts included in the 6th plan load forecast
- Assessment of standards enacted since the 6th plan and are not included in the load forecast.

Impact of Existing Federal Appliance Standards (already netted from load forecast)

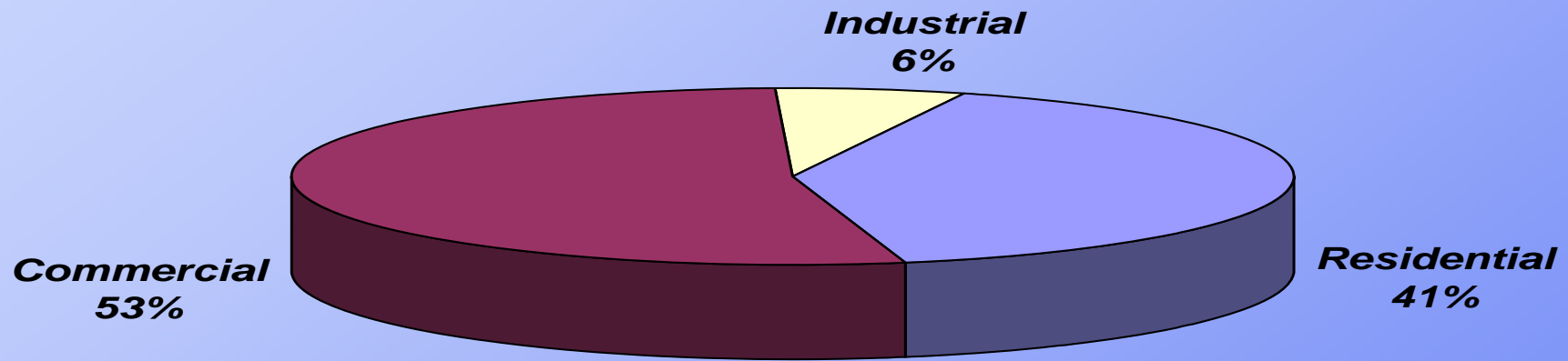


If the existing federal standards were not enacted.

- **Average Load would have been higher by 900 MWa**
- **Winter Peak would have been higher by 900 MW**
- **Summer Peak would have been higher by 1,100 MW**

Residential and Commercial Sectors are the Main Targets of Standards

Sectoral Share of 900 Mwa Reductions Load



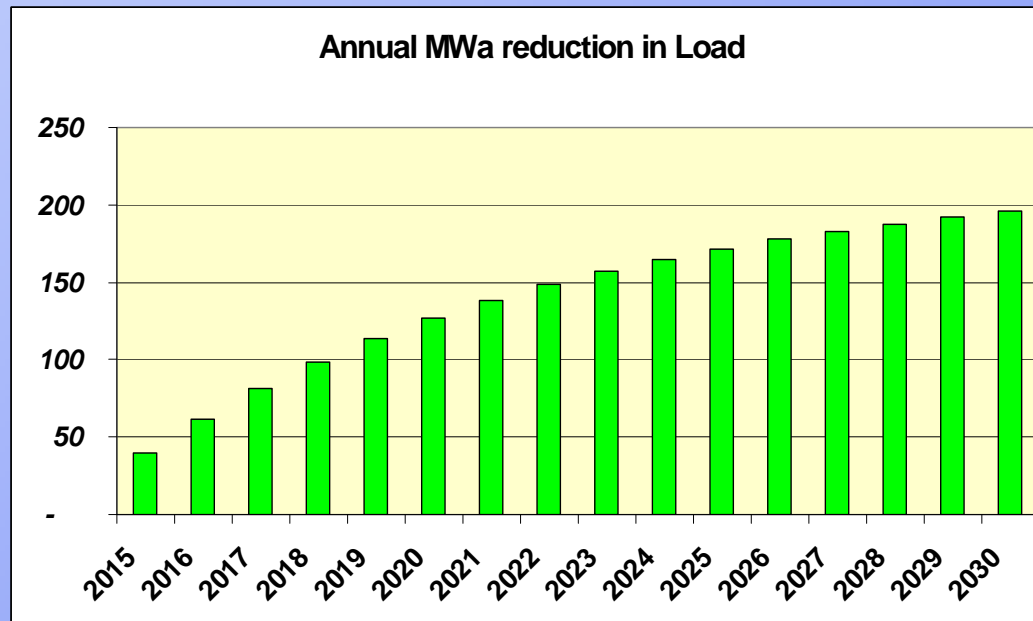
Almost half of the savings come from 2007 lighting standards

Codes and Standards Enacted but not in the 6th Power Plan Load Forecast

- Residential Water Heating Standards
- Work- in- progress
 - Commercial Lighting standards
 - State building codes

Residential Water Heater Standards

- Minimum standards for electric and gas water heaters improved by 11%, in effect starting in 2015.
 - Absent the increased standard, water heating load was projected to increase from about 2,250 MWa in 2015 to about 2,700 MWa by 2030, roughly 450 MWa.
 - With the standards in place, average load would be about 200 MWa lower and winter peak about 400 MW lower.



In Closing

About 50 MW of the 6th Power Plan's conservation targets can be met with new water heater standards.

In subsequent meetings

- We will report on the impact of new appliance standards and building codes as they become available.
- We will indicate the impact of these improvements on the conservation targets.