Northwest **Power** and **Conservation** Council

September 3, 2014

MEMORANDUM

TO: **Council Members**

FROM: **Tom Eckman**

SUBJECT: **Release of Draft Issue Paper on Propose High Level Indicators for Power**

BACKGROUND:

Presenter: Tom Eckman

Summary: Staff will present a set of High Level Indicators (HLIs) that are designed to serve as metrics against which progress on the Council's Power Plan and the purposes of the Northwest Power Planning and Conservation Act can be measured

Relevance: The development and tracking of HLIs for the Council's Power Plan would permit both the Council and interested parties to assess overall progress towards the Plan's Implementation and the Act's goals and purposes.

Workplan: Not in Power Division 2014 Work Plan

Background: In 2009 the Council approved three high-level indicators to be used to monitor the progress of the Council's Columbia River Basin Fish and Wildlife Program. These indicators are to be used to report to Congress and the Northwest's governors. The Council's Power Plan is its primary responsibility under the Northwest Power Planning and Conservation Act. Development of a parallel set of HLIs is needed to assess progress on the implementation of that Plan.

More Info: Staff presented a draft set of High Level Indicators to the Power Committee at its August meeting. Staff revised the proposed HLIs based on Power Committee and

comments from interested parties at that meeting. Staff is recommending that the Council release an issue paper for public comment on a revised proposal at the September Council meeting.

Proposed Potential High Level Indicators for Power

The Council develops high level indicators to track the progress of power planning efforts in the Northwest. The collective efforts of many entities, including the Council, electricity consumers, and utilities contribute to an adequate, efficient, economical and reliable power supply in the region. These indicators cannot be interpreted as a performance measure for any single entity, but instead provide a high level overview of outcomes that reflect regional progress.

September 9, 2014

Basis of Power System High Level Indicators

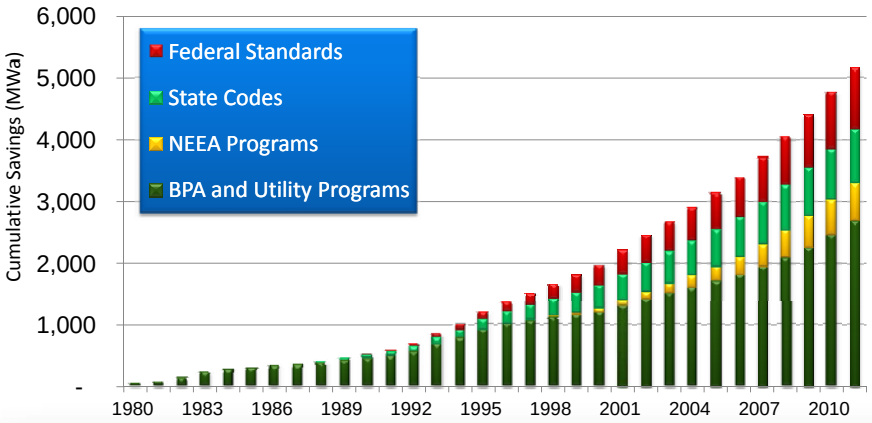
Purposes from Power Act

- Encourage *conservation and efficiency* in the use of electric power
- Encourage the development of *renewable resources* within the Pacific Northwest
- Assure the Pacific Northwest of an *adequate, efficient, economical, and reliable* power supply

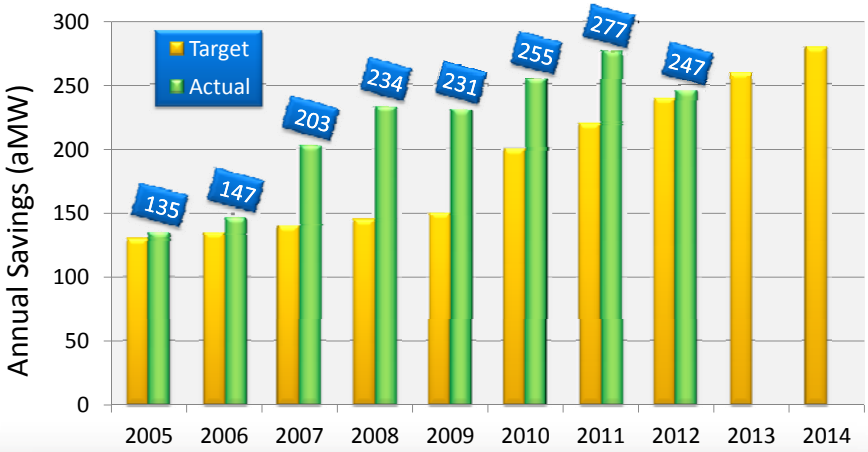
Potential Metrics – *Conservation and Efficiency*

- Cumulative Savings Since Act's from all mechanisms
- Annual Utility/SBC Program Savings vs. Plan Targets
- Annual Utility/SBC Program Savings As A Share of Regional Loads/Retail Sales
- Levelized Cost of Utility/SBC Savings
- Electricity Use per Person
- Electricity Use per Unit of Economic Output

Since 1980 Utility & BPA Programs, Energy Codes & Federal Efficiency Standards Have Produced Over 5300 MWa of Savings



Energy Efficiency Achievements Have Exceeded Council Plan Targets Since 2005



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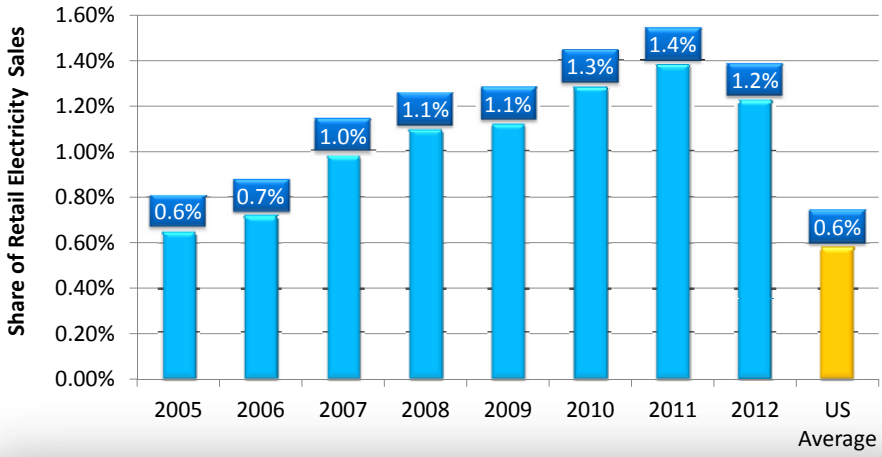
Utility/SBC-Funded Efficiency Savings As A Share of System Loads Are More Than Double the US Average



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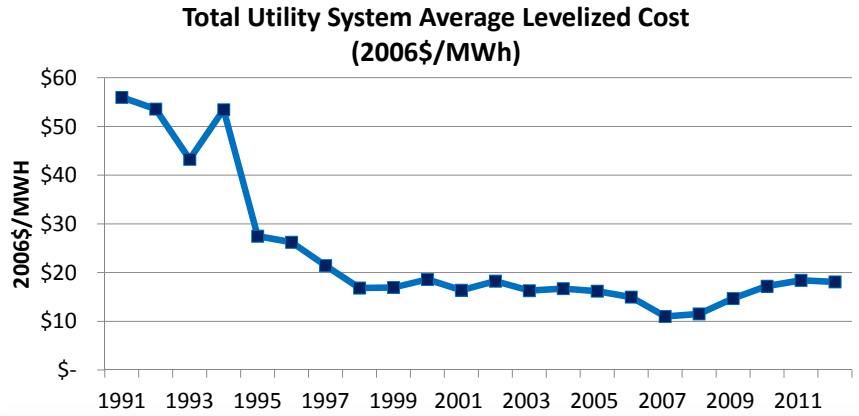
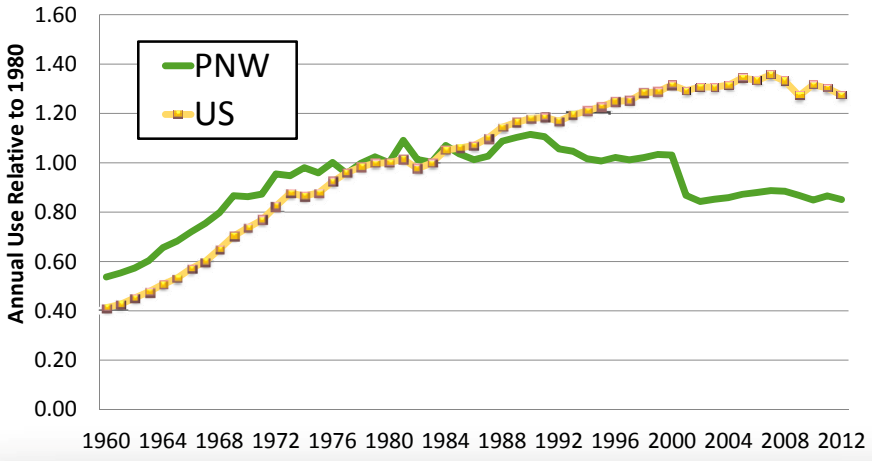
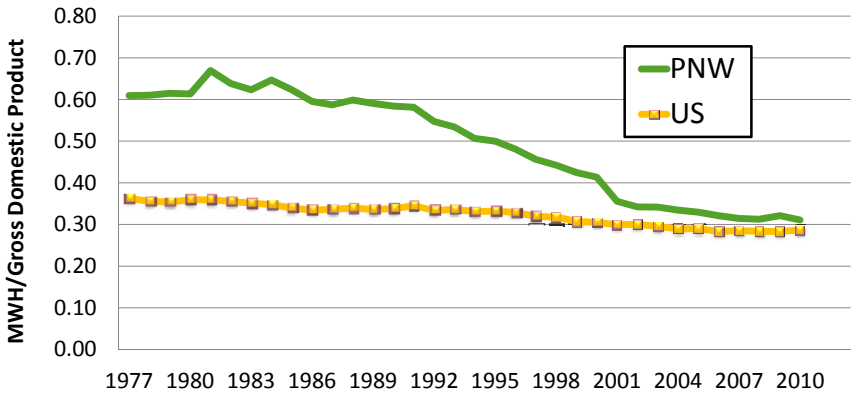
Average Utility Levelized Cost of Energy Efficiency Remains Low



Northwest Electricity Use Per Person Has Been Decreasing



Northwest Electricity Intensity Per Unit of Economic Output Has Been Decreasing

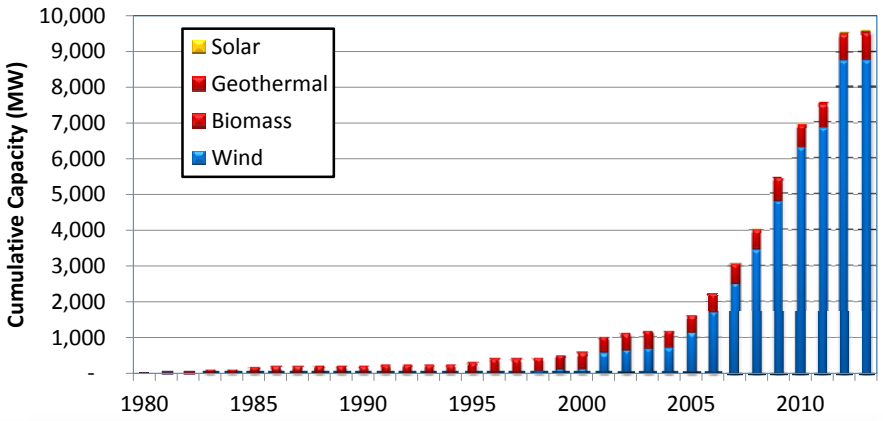


Gross Domestic Product : BEA- 2005 constant dollars
Energy Consumption: State Energy Data

Potential Metrics – *Renewable Resources*

- Cumulative Renewable Resource Development Since 1980
- Annual Renewable Resource Contribution to Total Load Service
- Trends in Renewable Resource Capital Costs

Renewable Resource Development Since1980



* Includes all renewable resource development physically located in the Power Act region and PacifiCorp wind projects in WY; does not include hydropower upgrades (could potentially add this at a later date)

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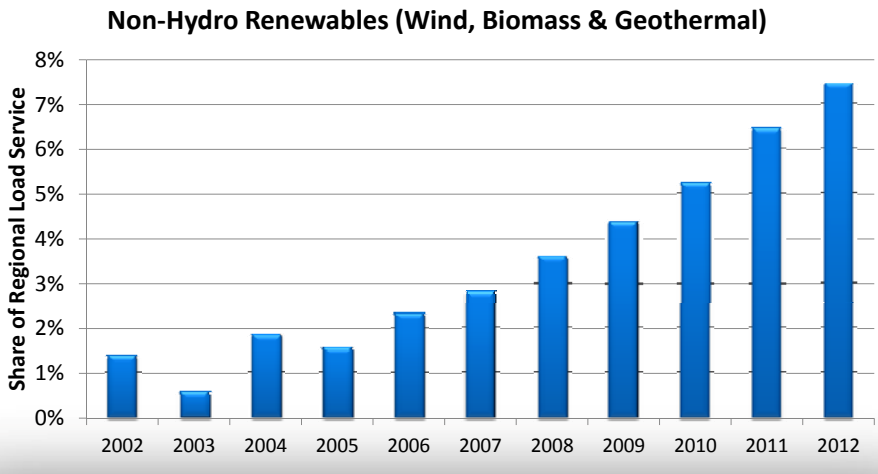
Annual Renewable Resource Share of Load Service



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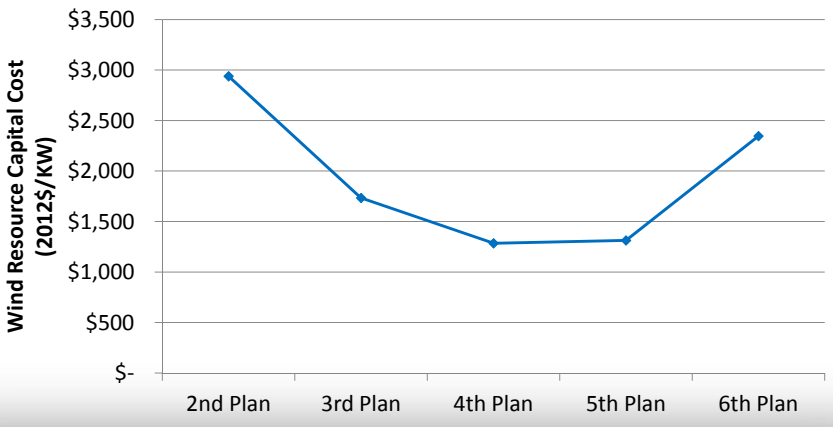
Renewable Resource Capital Cost Trends

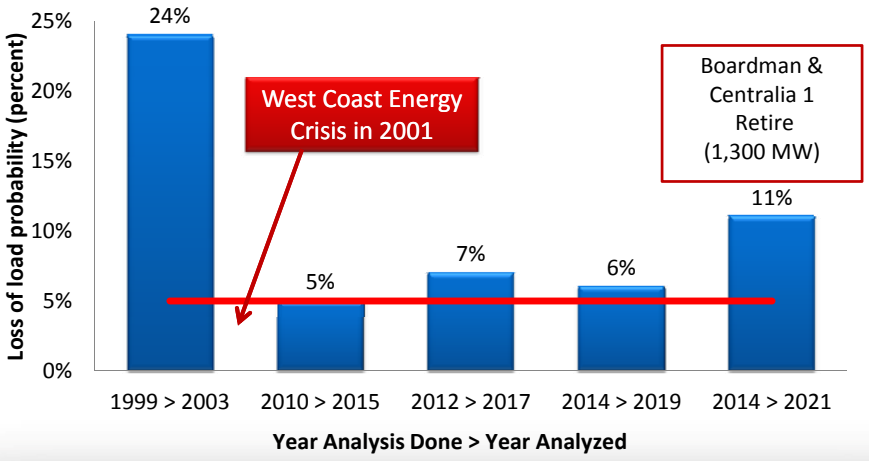


Potential Metrics – Regional Resource Adequacy and Reliability

- Adequacy
  - Trend in Resource Adequacy Assessment Results
    - Loss of load probability < 5%
- Reliability
  - Generating Resource Availability
    - (Example – Federal Hydroelectric Resources)

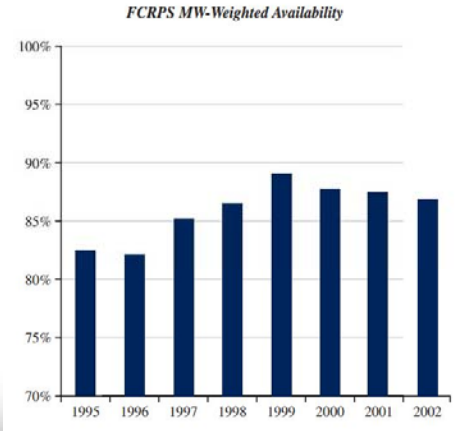
Regional Resource Adequacy Trend

Council Standard: LOLP Maximum is 5%



Potential Reliability Metric
Regional Generation System Availability

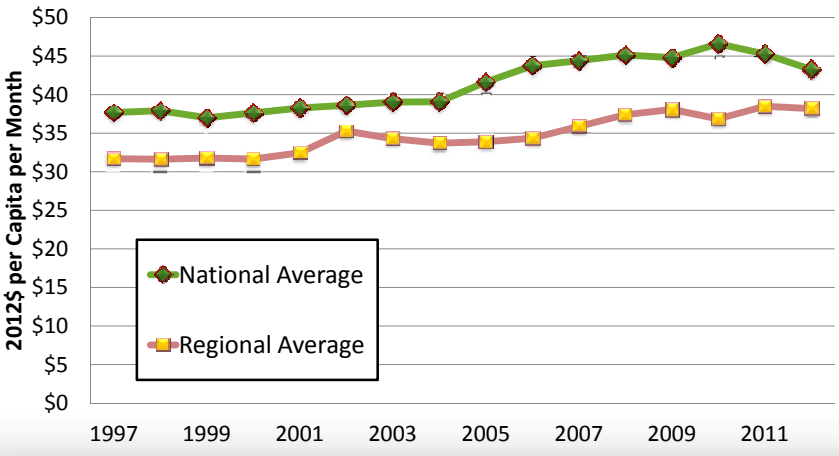
Example: Hydro Generation Availability



Potential Metrics – *Economical* Power Supply

- Average PNW Residential Electric Bills vs. US
- Electric Revenues as a Share of Gross Regional Product/National GDP

Northwest Electric Bills Are Lower Than the National Average



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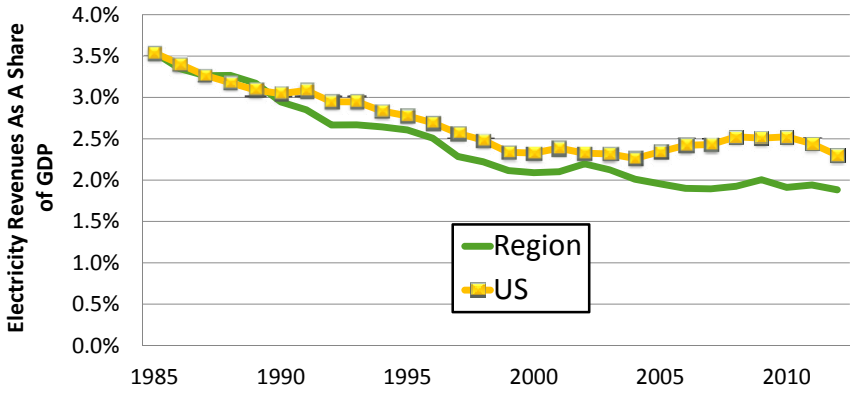
Northwest Electric Revenues Comprise A Smaller Share of GDP Than The National Average



Gross Domestic Product : Based of Bureau of Economic Analysis- measured in $2005 dollars.
Electric revenue from : State Energy Data System- includes electricity sales to all sectors (i.e., residential, commercial, industrial and transportation).

Potential Metrics

Significant Data Development Required

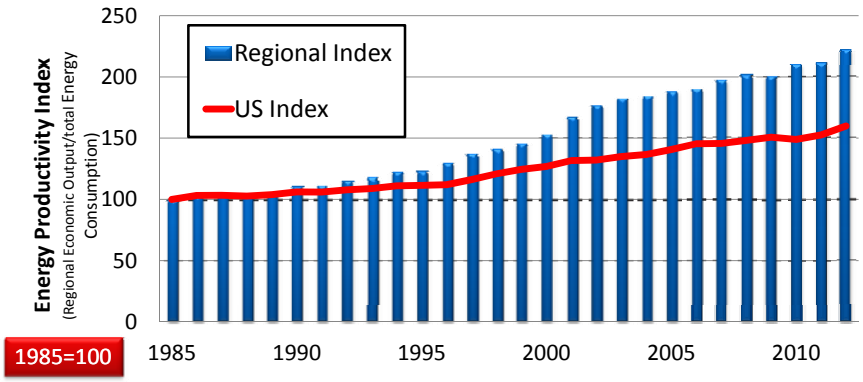
- Hydropower System "Fleet" Efficiency (MWH/acre-foot)
- Thermal System "Fleet" Efficiency (MWH/MMBtu)

Note: Staff was unable to locate current and/or historical data on regional generation fleet "heat rates." Such data may be available and could be requested during public comment.

Metrics Not Recommended

- Total Energy Use per Unit of Economic Output
- State Rank of PNW State Electric Bills
- Transmission Outages per Year/100 miles

Northwest Total Energy Productivity Has Increased Faster Than The US Average



Gross Domestic Product : Based of Bureau of Economic Analysis- measured in $2005 dollars.
Energy Consumption from : State Energy Data System- includes all sectors, residential, commercial, industrial and transport and includes all energy forms, not just electricity .

The Northwest Has Some of the Lowest Electricity Cost In The Nation in 2012*

State	Residential Sector Average Monthly Bill	Commercial Sector Average Monthly Bill	Industrial Sector Average Monthly Bill
Idaho	5	1	2
Montana	9	3	5
Washington	11	24	8
Oregon	16	13	4

Source: http://www.eia.gov/electricity/sales_revenue_price

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*State with Lowest Bill = 1

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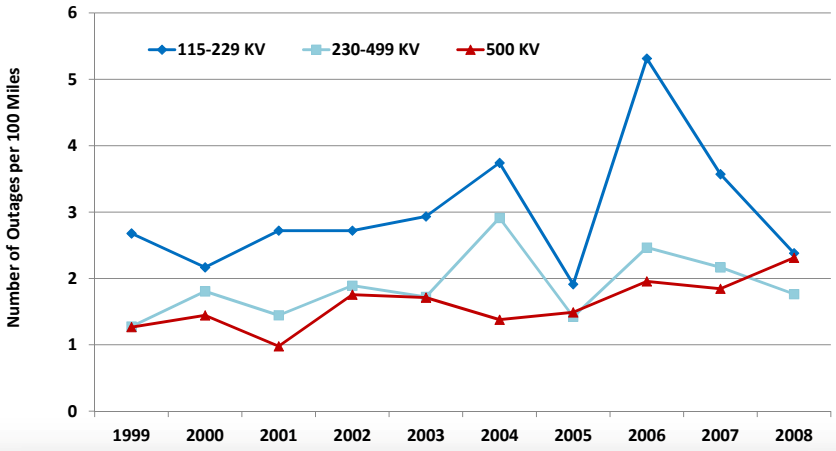
Potential Reliability HLI
Transmission Outages/Year (>1min)



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Questions for Public Comment

- Are the proposed metrics meaningful measures of progress towards the Act's purposes and the Council's Power Plan goals?
- Are there other metrics that would serve as better measures of progress? If so, what are they and is the data to compute them readily available?
- Should any of the metrics that were considered, but not recommended be included in the Council's HLI's for power?
- Are there data sources that would support the use of metrics that were rejected due to the resource requirements of establishing and maintain the metric (e.g., average hydroelectric efficiency - MWH/acre-foot, average thermal generator efficiency - MWh/MMBtu)?