Energy & Emissions Intensity Report

UTC Recessed Open Meeting
April 18, 2017 UE-160785

PUGET SOUND ENERGY

Overview

Known Sources

- Average megawatt hours (aMWh) per residential customer
- Average megawatt hours (aMWh) per commercial customer
- Megawatt hours (MWh) per capita (i.e. total load / population served)
- Annual carbon dioxide (CO_2) emissions measured in short tons
- Ratio of Annual CO_2 emissions to CO_2 emissions in 1990

Unknown Sources

- Annual CO_2 emissions (short tons) from unknown generation sources
- Annual megawatt hours (MWh) delivered to retail customers from unknown generation sources
- Percentage of load served by unknown generation sources

Trend Analysis

Action Items

Pathways

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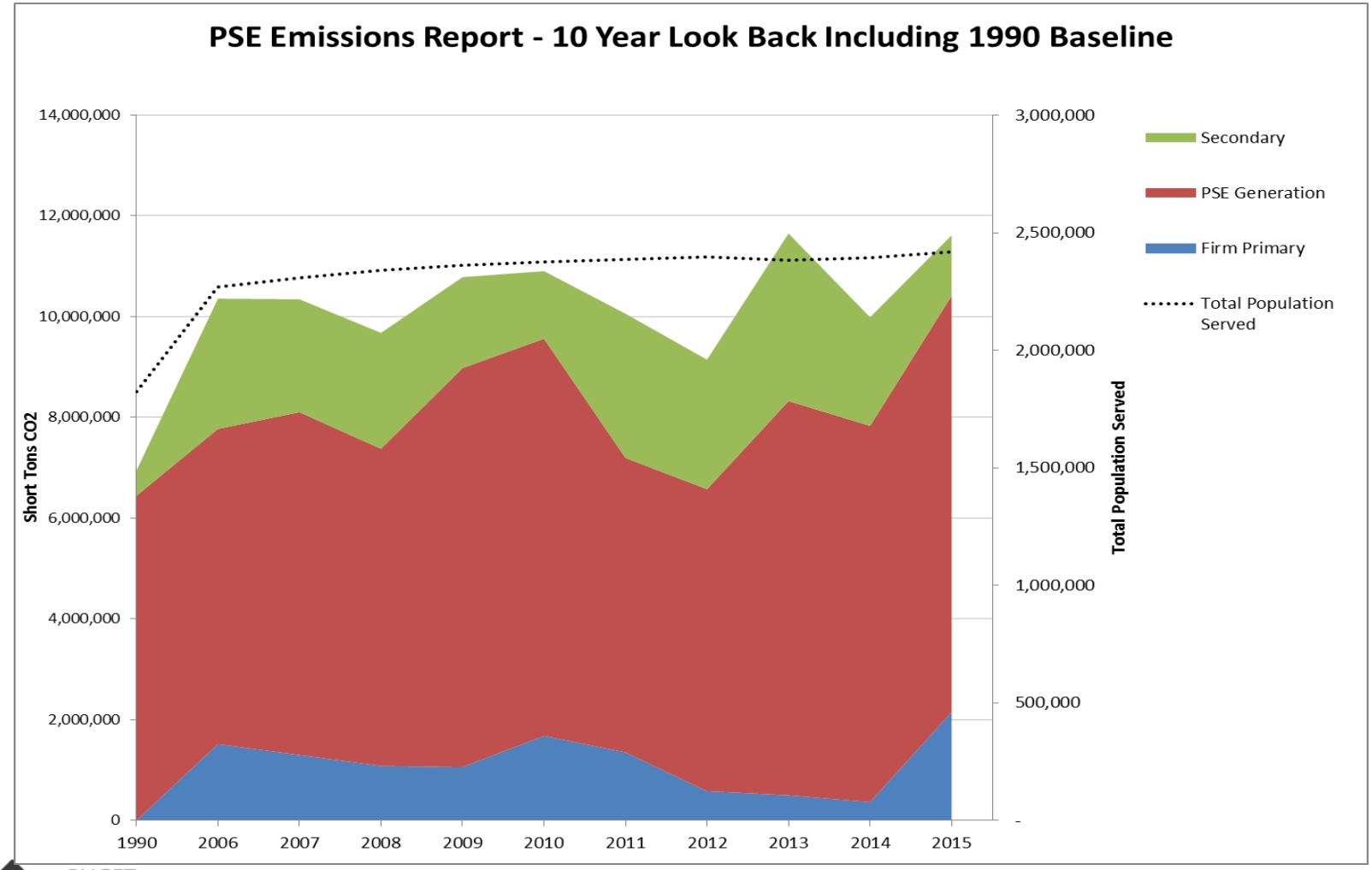
Emissions from Energy Supply



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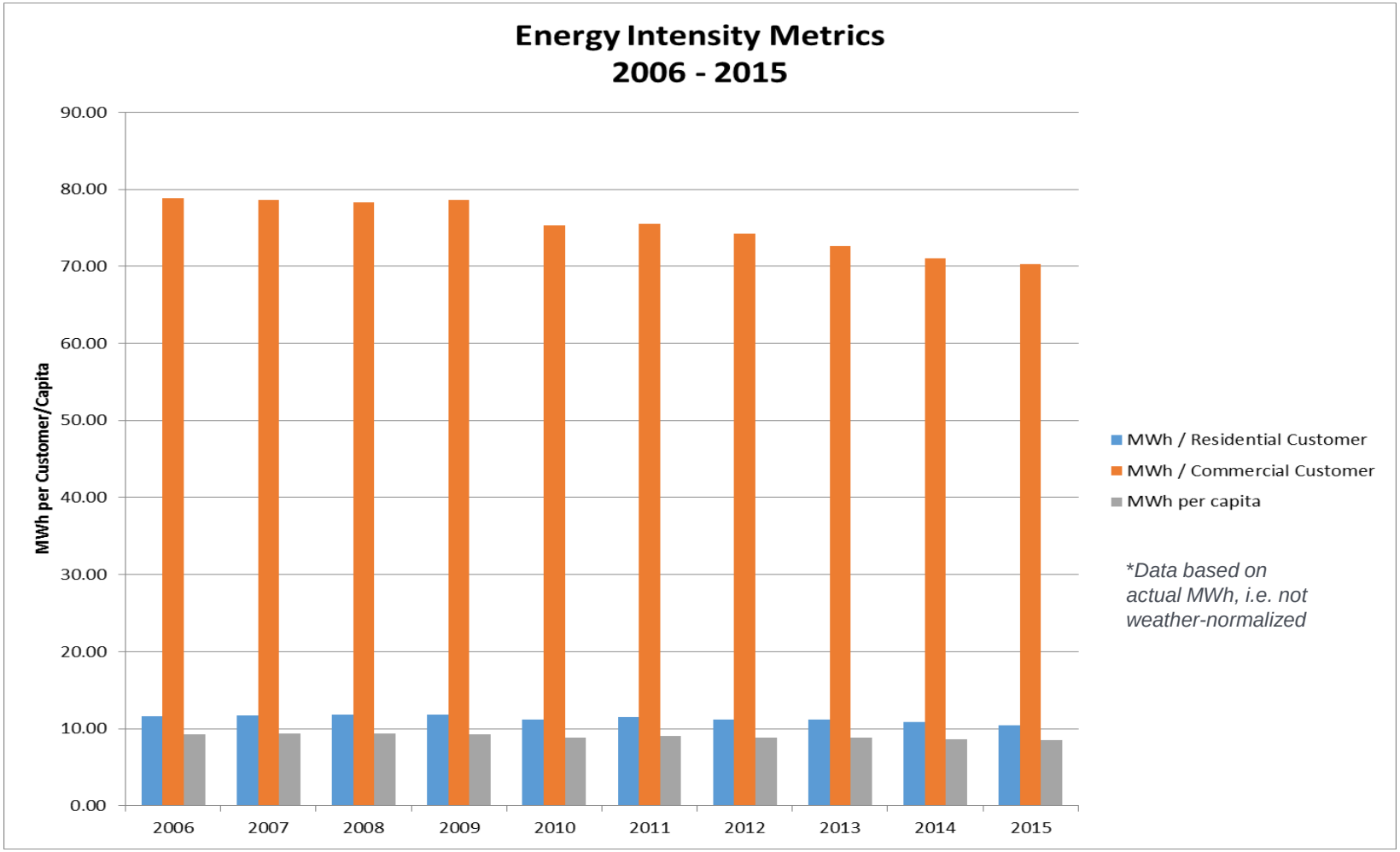
Energy Intensity–Supply to Customers



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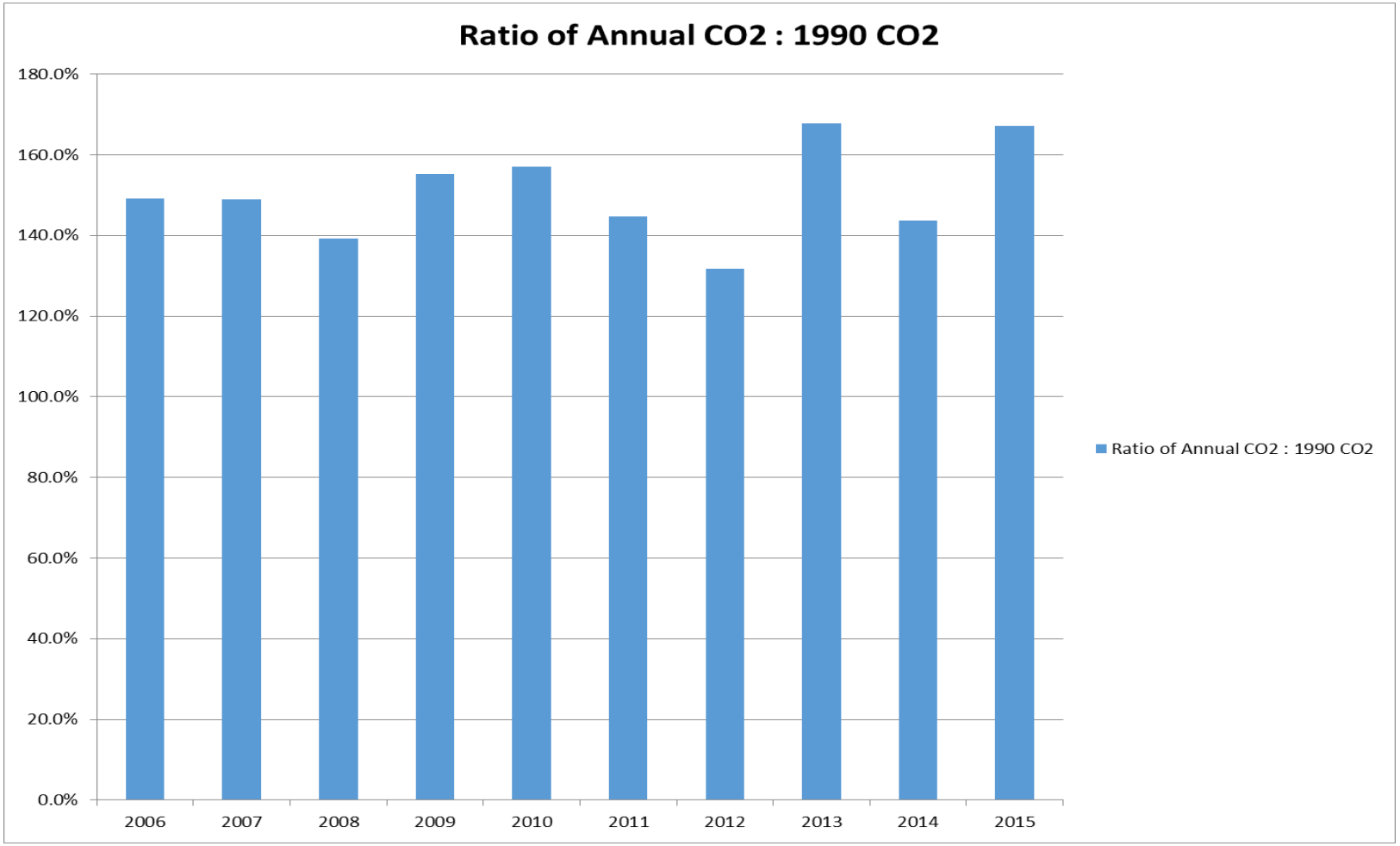
PSE Emissions Relative to 1990



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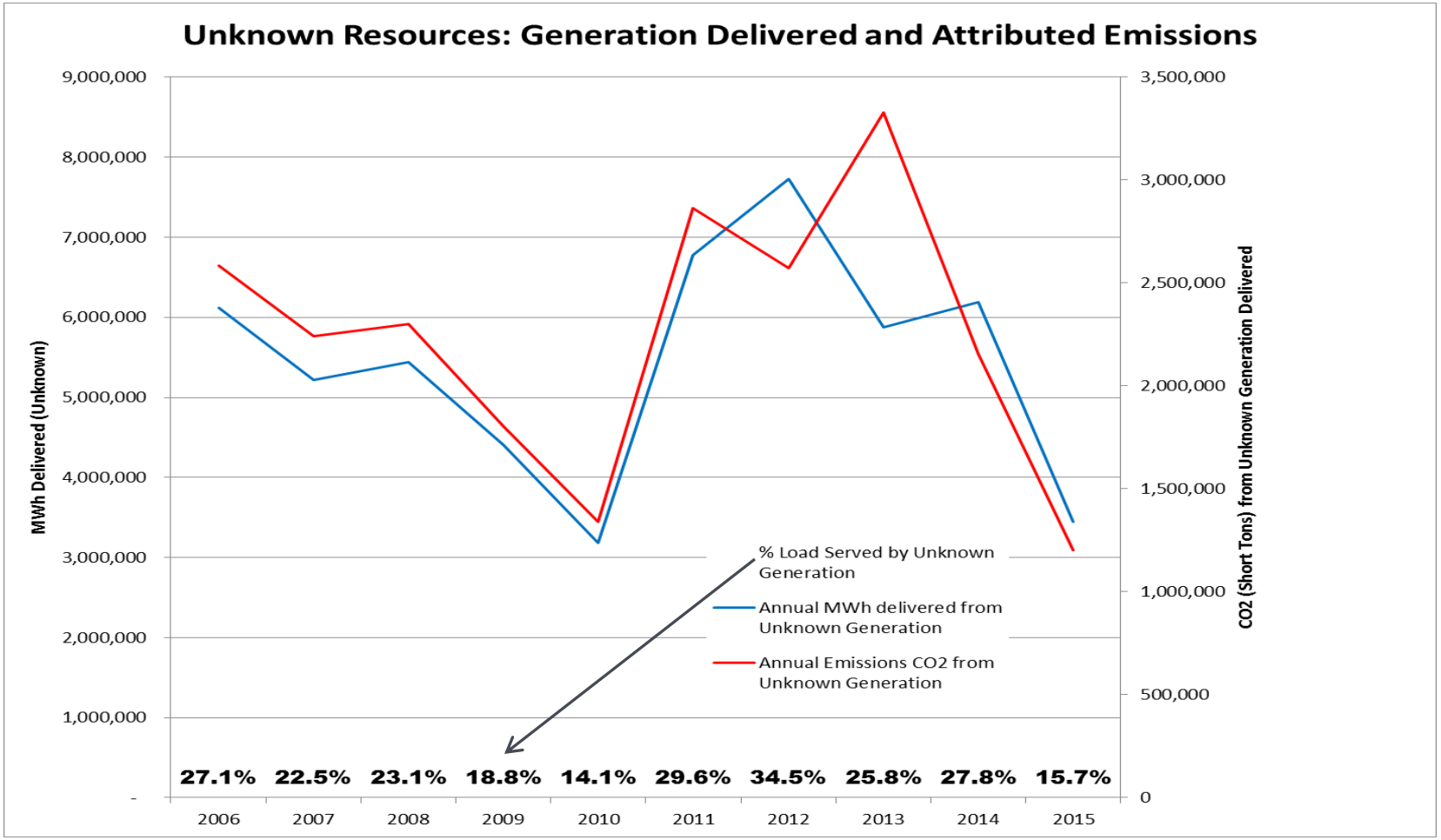
Unknown Sources Analysis



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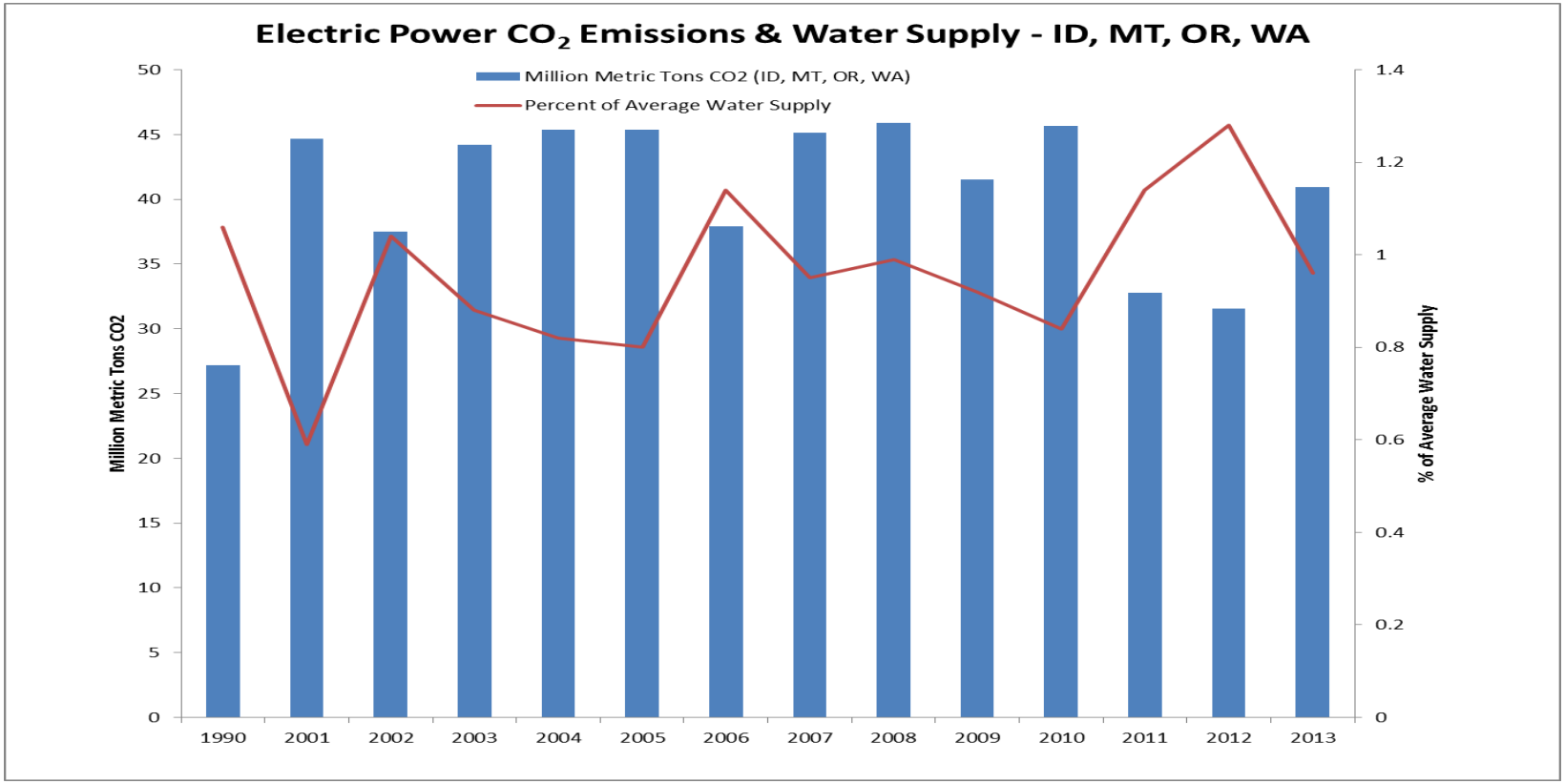
Trend Analysis - Northwest

The takeaway: In PNW, electric power emissions are inversely correlated to water supply



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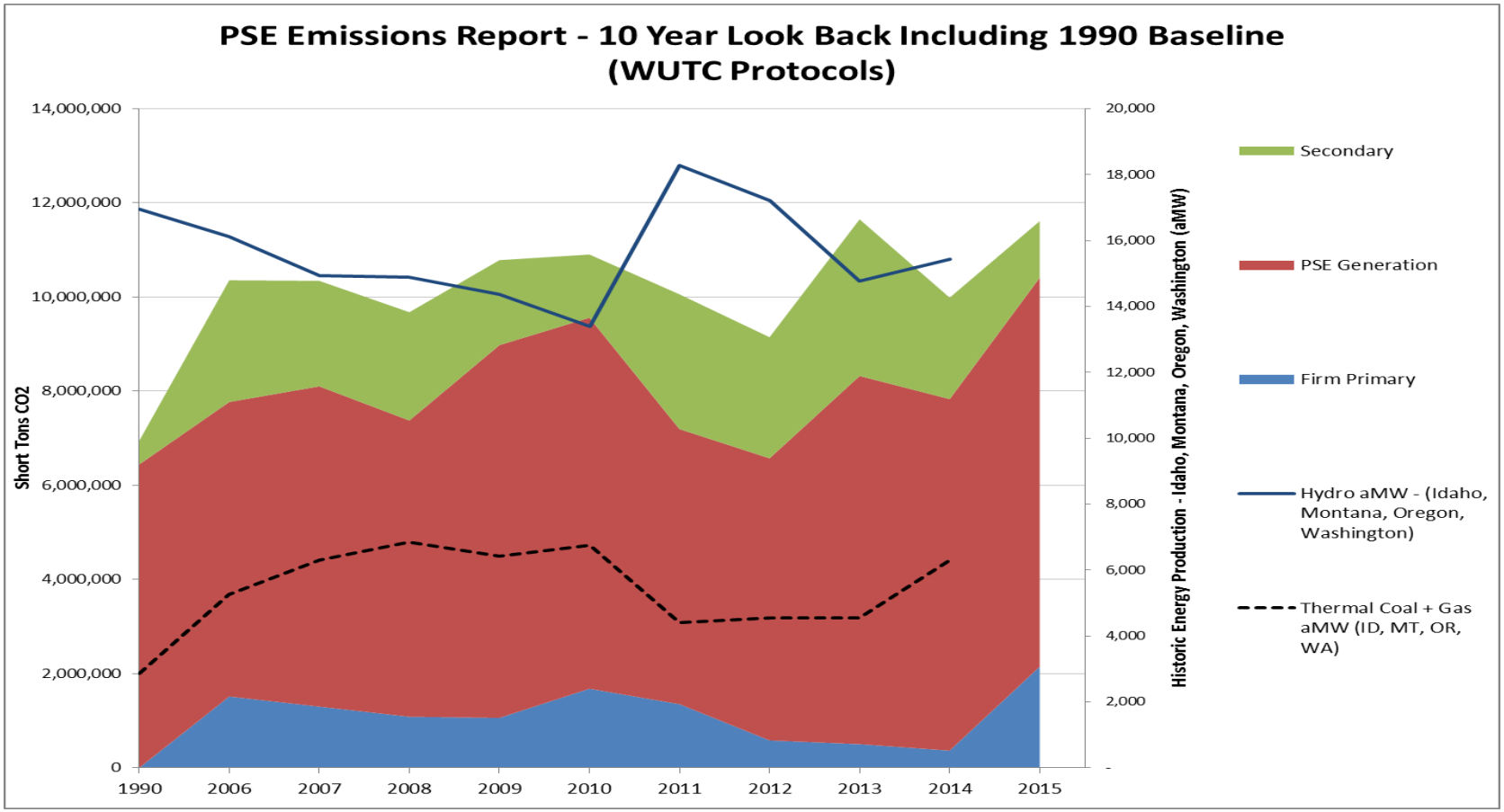
Trend Analysis - PSE

The takeaway: PSE's emission track with regional trends



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Action Item Update

- For owned resources, PSE relies on EPA's Subpart C & D methods to report total emissions
- For Firm Power Purchases, PSE developed unique emission rates using annual heat input and net generation reports (EIA-923), and applied these factors to each net firm purchase
  - **Example: Transalta purchases in 2015**

$$\text{PSE Firm Emission from Transalta}_{2015} =$$

$$\frac{(51{,}512{,}949\ \text{MMBtu}_{\text{heat input}}) \times (214\ \text{lb CO2/MMBtu})}{4{,}576{,}835\ \text{MWh}_{\text{netgen}}} =$$

$$2{,}411\ \text{lb CO2 / MWh} \times (1{,}568{,}805\ \text{MWh}_{\text{PSE purchased}}) =$$

1,891,255 short ton CO2

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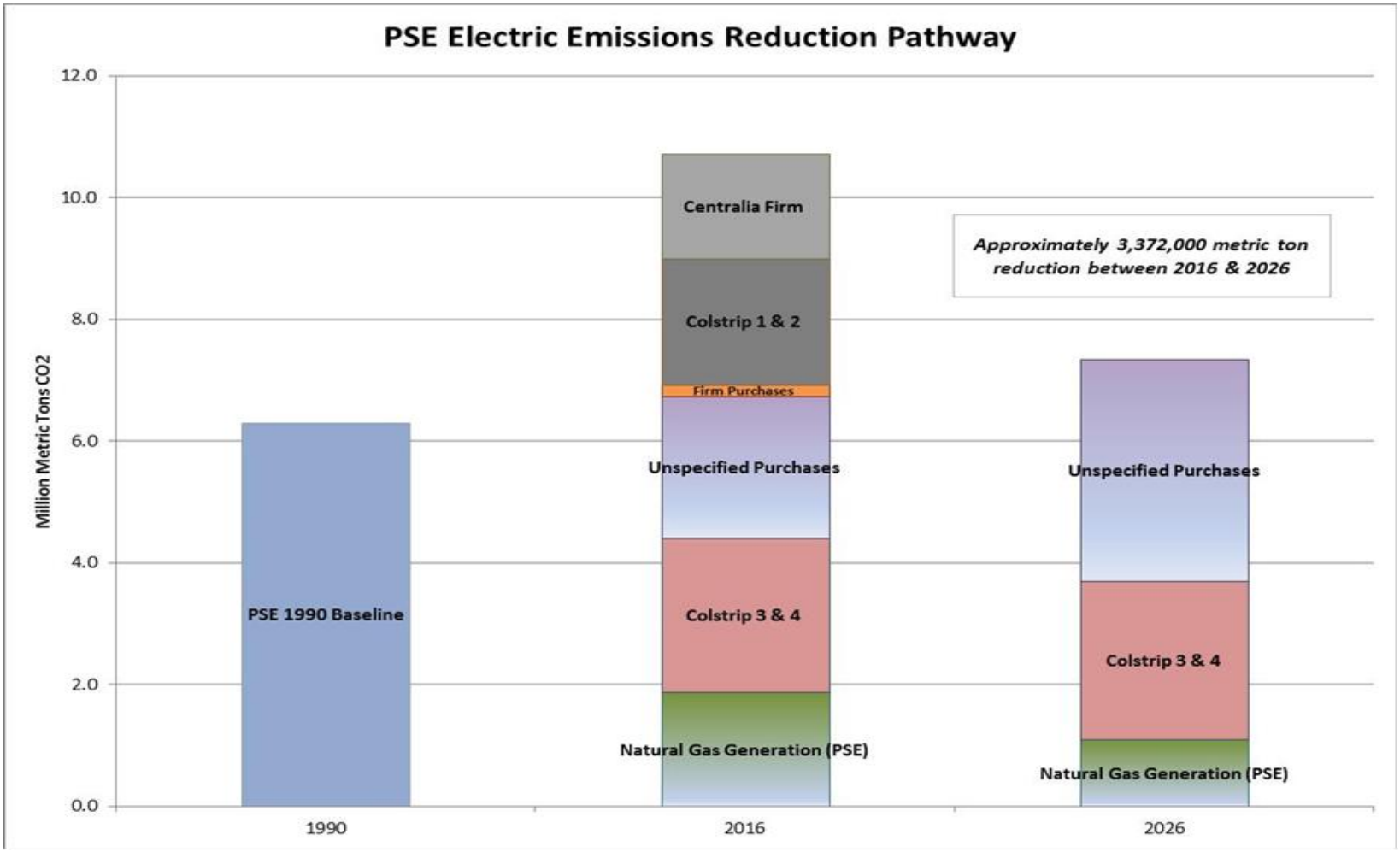
PSE's current pathway is reducing emissions



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Pathways

- Climate change is a matter that needs to be addressed and PSE stands with the State of Washington and others to take meaningful actions to reduce carbon emissions.
- Carbon policy should address the largest geographical footprint politically possible and include all economic sectors.
- Carbon policy should be designed to achieve real carbon reductions, which means the inclusion of complimentary measures and that a material portion of any revenues raised should be reinvested toward targeted carbon reduction programs.
- PSE actions currently underway will reduce the carbon emissions from our electric system by over 30% in the next 10 years.
- PSE is actively engaged in a company-wide strategy to address carbon reduction because there are economical ways to further reduce our own footprint and utilize the electric system to reduce carbon from other sectors.

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