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Beneficial Electrification EE Version 2.0

Committee on Energy Resources and the Environment

NARUC Summer Policy Summit
Scottsdale, Arizona

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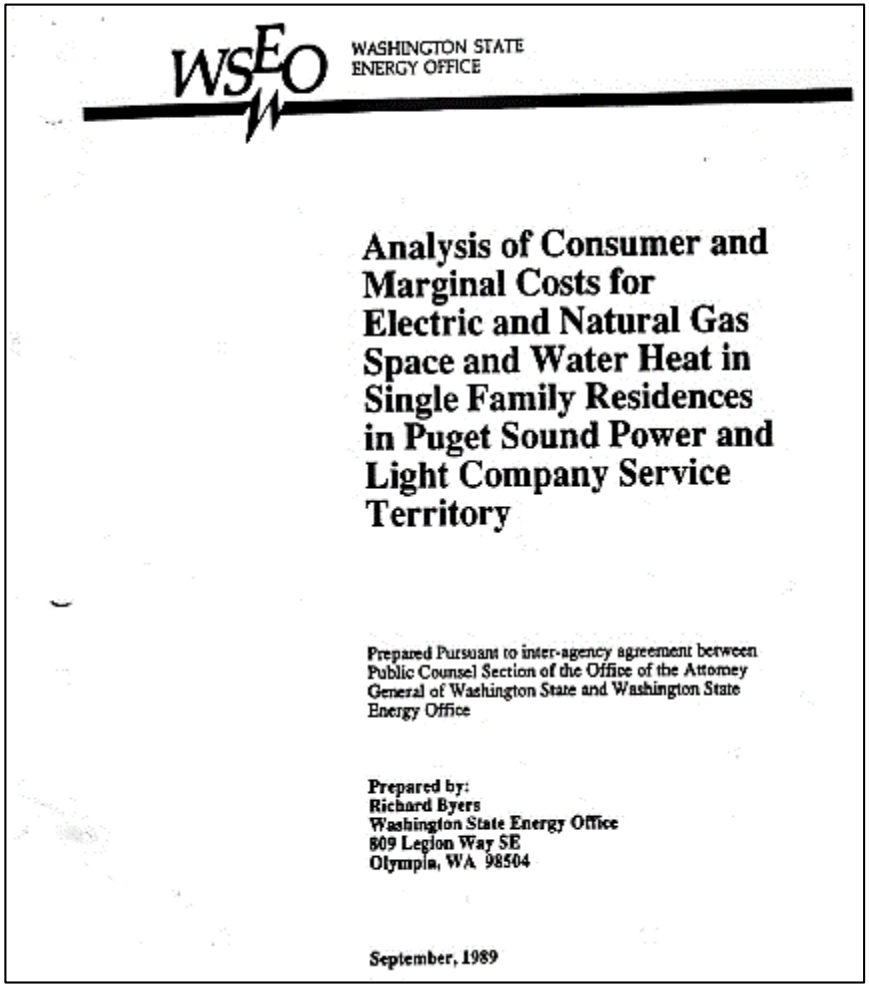
What Makes for ***Beneficial*** Electrification (BE)?

Three explicit criteria: Achieve At Least One Without Adversely Impacting The Others

1. Saves Customers Money Long-Term; New Services

2. Reduces Environmental Impacts

3. Enables Better Grid Management



WASHINGTON STATE ENERGY OFFICE

Analysis of Consumer and Marginal Costs for Electric and Natural Gas Space and Water Heat in Single Family Residences in Puget Sound Power and Light Company Service Territory

Prepared Pursuant to inter-agency agreement between Public Counsel Section of the Office of the Attorney General of Washington State and Washington State Energy Office

Prepared by:
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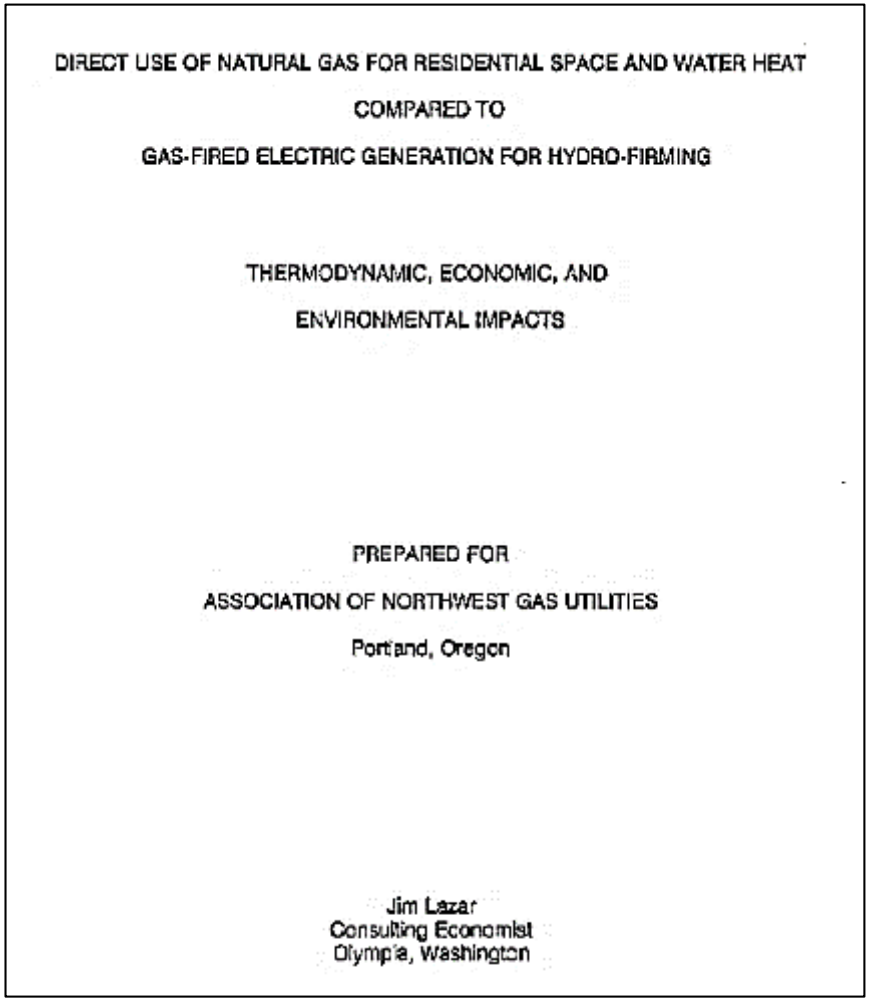
September, 1989



DIRECT USE OF NATURAL GAS FOR RESIDENTIAL SPACE AND WATER HEAT

COMPARED TO

GAS-FIRED ELECTRIC GENERATION FOR HYDRO-FIRMING

THERMODYNAMIC, ECONOMIC, AND

ENVIRONMENTAL IMPACTS

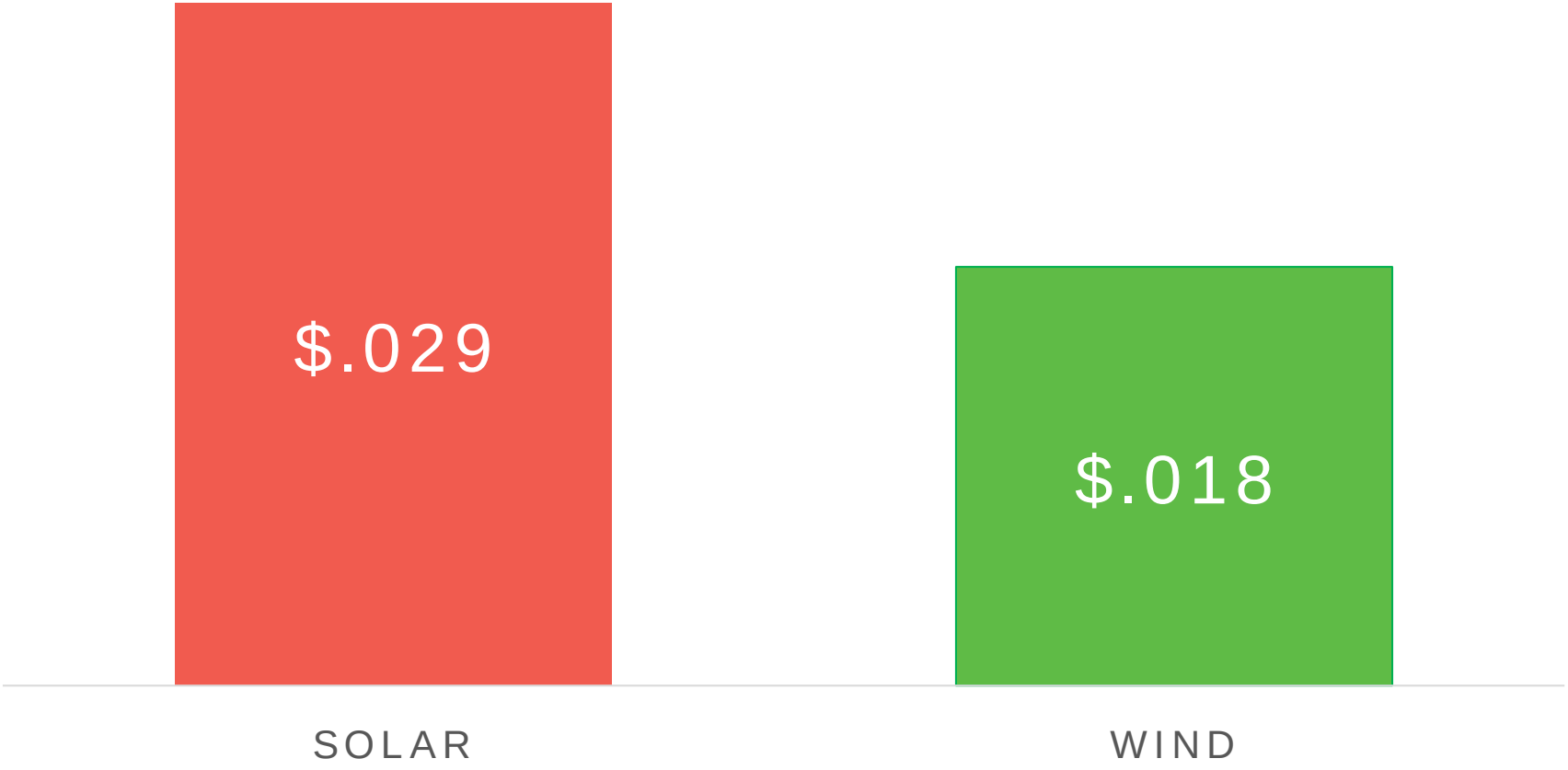
PREPARED FOR

ASSOCIATION OF NORTHWEST GAS UTILITIES

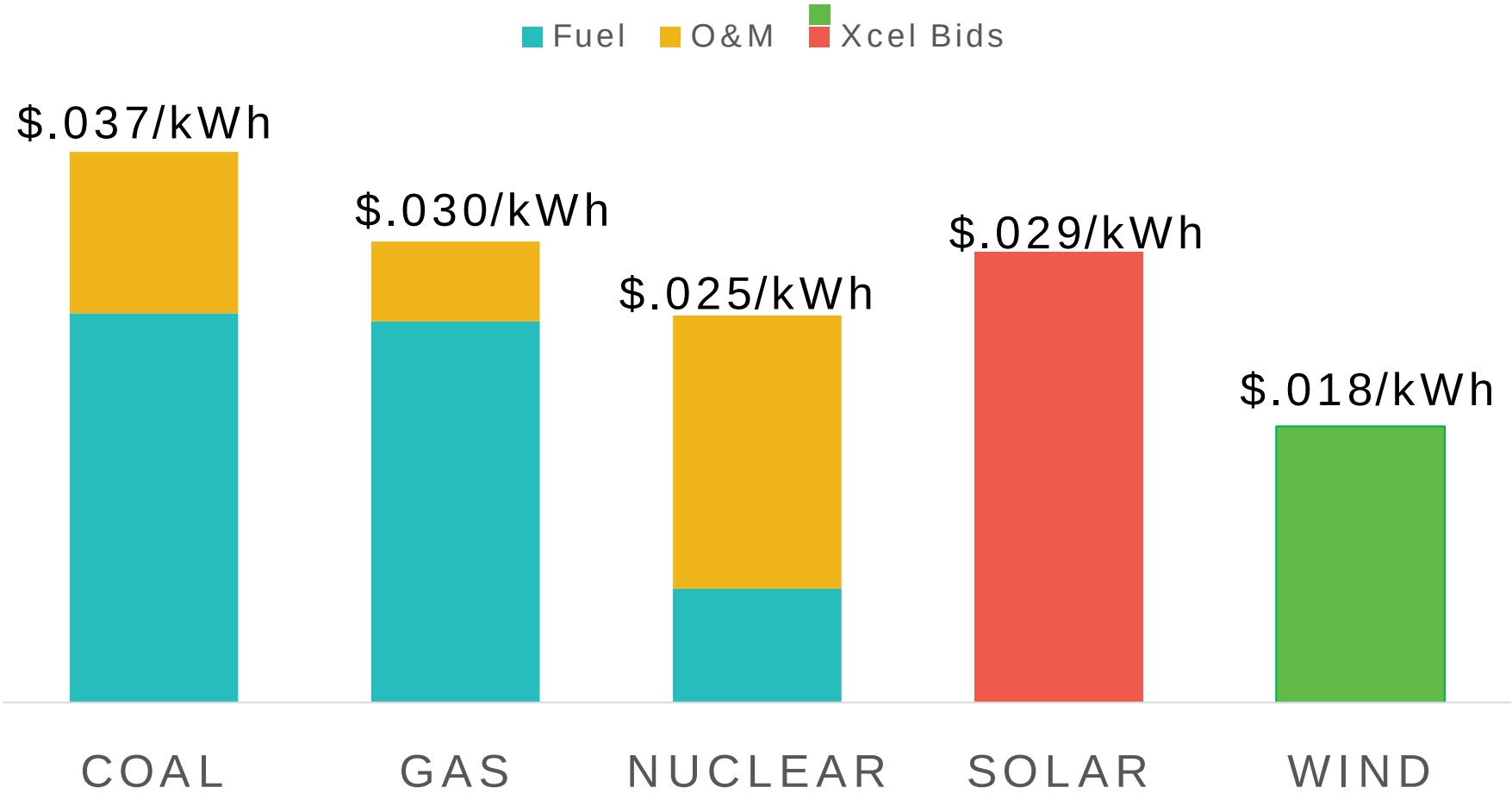
Portland, Oregon

Jim Lazar
Consulting Economist
Olympia, Washington

December, 2017
Xcel Bid Median Prices, $/kWh



Existing Plants vs. Excel Bids



Existing Plant Average Fuel and O&M from USEIA Table 8.4 Electric Power Annual 2016

An Easy Example: Oil vs. Heat Pump Water Heater

BOCK 58800 32E OIL FIRED WATER HEATER, GALLON / 104000 BTU - TANK ONLY

Our Price Per Unit: $1,054.83

Rheem Prestige Hybrid Electric Water Heater

$1,389.00

Oil vs. Heat Pump Water Heater:

- Consumer Economics: 40% advantage 
- Emissions: 40% advantage 
- Grid Flexibility: Heat pump can be controlled into key hours. 

Even if we generate the electricity with fossil fuels, we use less primary energy via a heat pump.

This is unambiguously a form of energy efficiency.


easy

Easy Examples of Electrification

- Oil and propane water heater replacement
- Electric vehicles with smart charging
- Hotel water heating

The Easy Stuff Needs Support From Regulators

- Societal cost test, to determine what is truly “beneficial.”
- Time-varying rates, to align consumer and system costs.
- Programmatic support like other energy efficiency programs.

Promising Opportunities for Electrification

- New build super-efficient residences
- Oil and propane space heat
- Warm climate residential

Challenging Areas for Electrification Today

- Existing gas space and water heat
- Cold Climate space heat

Gnarly Issues for Regulators
#1: Electric Vehicle Supply Equipment

- Role of the electric utility
  - No special treatment
  - Make-ready only
  - Retail service at regulated prices
  - Exit the market when it is competitive

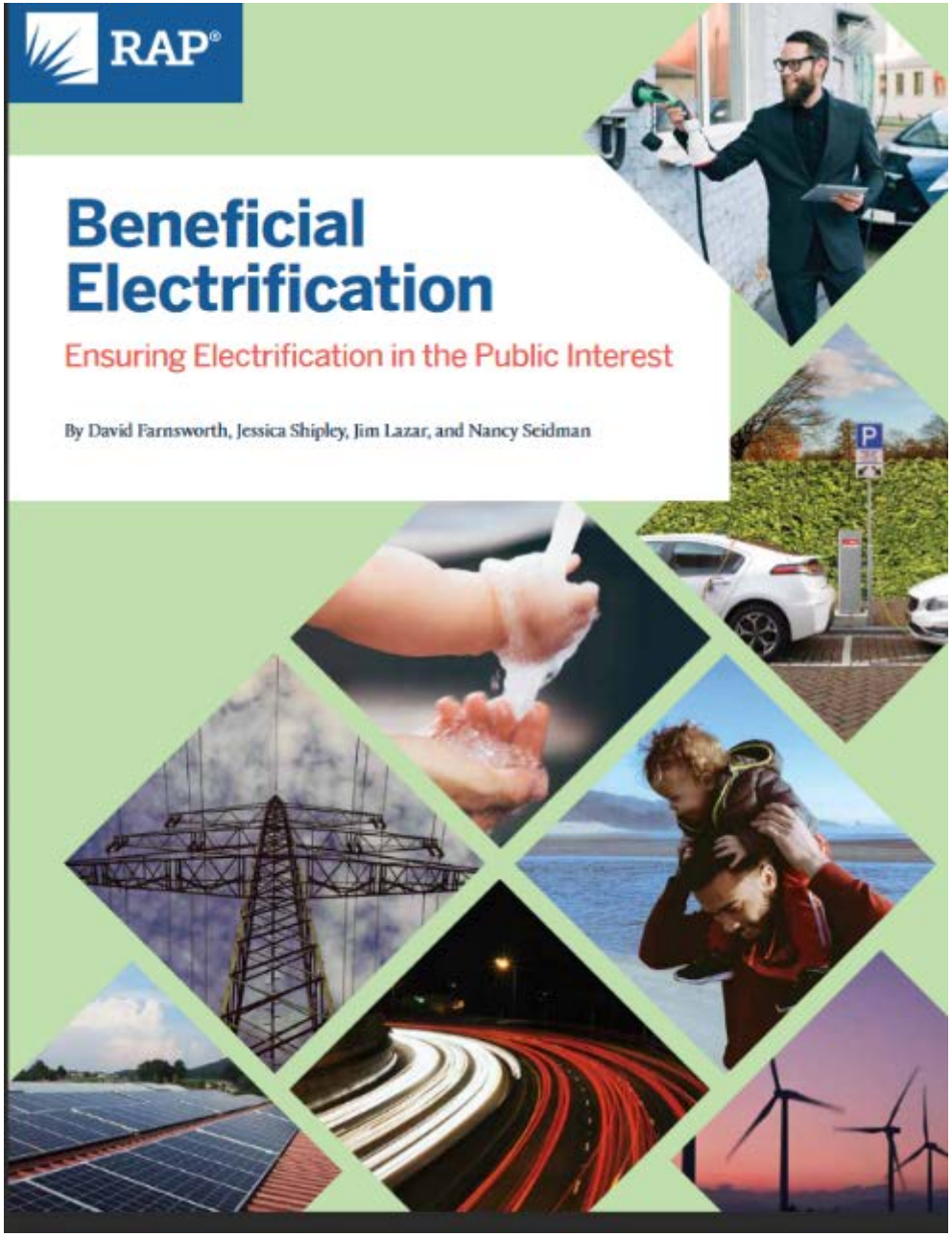
Gnarly Issues for Regulators #2: New/Renewal Gas Infrastructure

- **New Construction:** Cost-effectiveness is driven by line extension cost.
- **Renewals:** Replacement of gas infrastructure may be uneconomic.

https://upload.wikimedia.org/wikipedia/commons/1/17/Polyethylene_gas_main.jpg

Regulators: Stay Ahead of the Curve

- Insist on transparency
- Consider an all-fuels IRP
- Reconsider bans on fuel switching programs
- Review line extension policies
- Invite innovation
- Remain skeptical



Available at the RAP table

Or for free download at

www.raponline.org

About RAP

The Regulatory Assistance Project (RAP)® is an independent, non-partisan, non-governmental organization dedicated to accelerating the transition to a clean, reliable, and efficient energy future.

Learn more about our work at raponline.org

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