



# **Regulatory Barriers to Promotion and Development of Renewable Energy Technologies**

**Presentation for the Guatemala Renewable Energy National  
Policy Forum**

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# Factors Affecting Investment Decisions

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- Costs of competing resources
- Integration issues
- Transmission issues
- Resource attributes and site attributes
- Storage

# Investment Factors – Costs of Competing Resources

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- State regulatory commissions are economic regulators; must determine whether a utility expenditure is prudent
- If the cost of a resource is significantly higher than others, commissions will not allow a utility to pass the higher costs on to customers
- Low-cost natural gas may be a deterrent to investments in renewable energy projects

# Investment Factors – Integration Issues

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- Intermittency requires some renewable resources to be firmed and shaped with other resources (hydro, natural gas)
  - Solar varies with time of day and cloud cover
  - Wind is highly variable throughout the day and year
- In the Pacific Northwest region of the U.S.A, overgeneration conditions during spring runoff period; wind projects curtailed

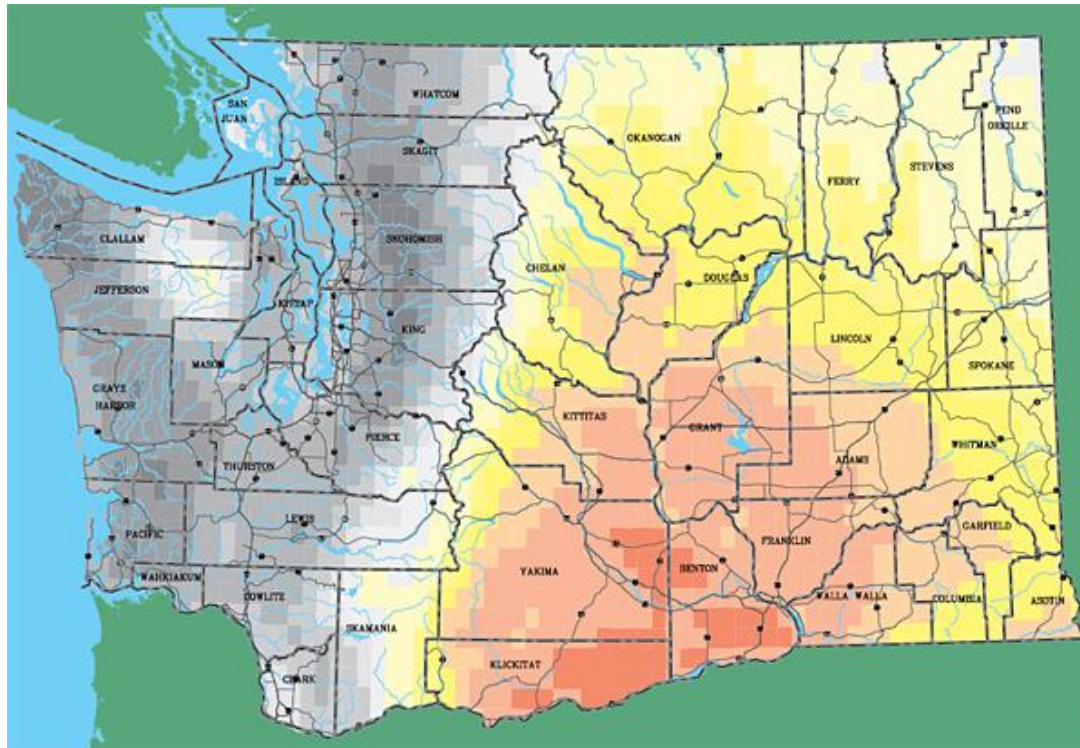
# Investment Factors – Transmission Issues

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- Distance of resource from load centers requires transmission
- Transmission investments can make resources uneconomic
- Transmission siting can be very contentious and can take a long time, adding to costs

# Investment Factors – Solar Resource and Site Attributes

- Western Washington is cloudy and rainy for much of the year; generally not an optimal location for siting solar projects





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## Investment Factors – Geothermal

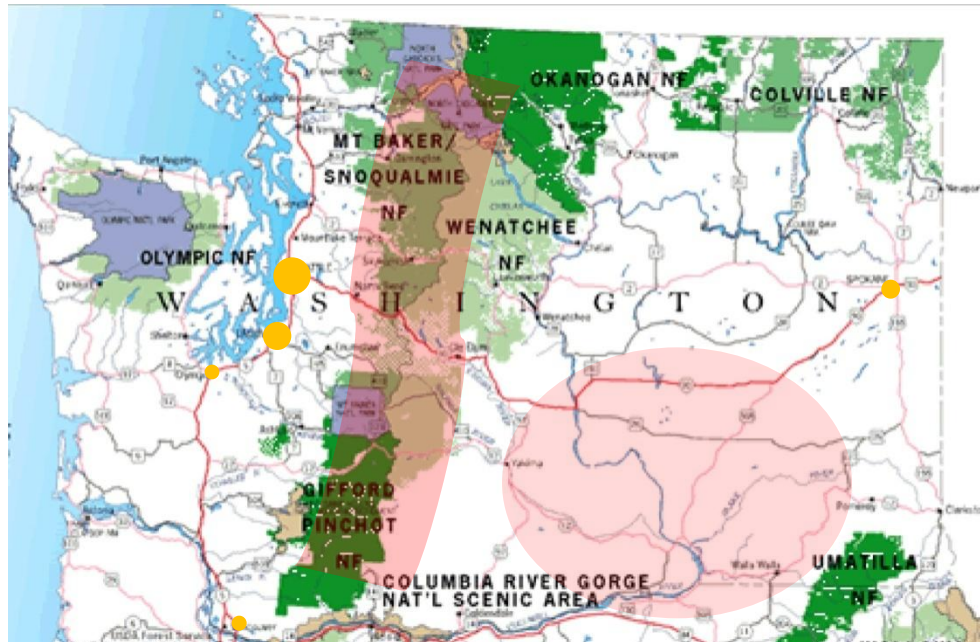
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- Washington State had 19,000 MWh of electricity produced via geothermal in 2010, and the state has one geothermal electricity production project in development



# Investment Factors – Geothermal

- Most potential geothermal sites are located in National Forest and National Park lands; unlikely that the state will see significant expansion of this resource



## Investment Factors – Geothermal

- Significant geothermal development in other parts of the U.S.A
  - President Obama's proposed budget includes \$55 million for geothermal technology development
  - Additional funding for which geothermal industry can compete, including \$300 million for research on Enhanced Geothermal Systems (EGS)

# Investment Factors – Storage

- Conventional resources such as coal, natural gas, and hydro more easily stored
- No commercially viable storage options for wind or solar at this time
- However, significant investment in Washington in research and development of storage options (grid analytics, materials engineering, and emerging workforce training)

# QUESTIONS?