



Cascadia Center ...Beyond Oil

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Powering the Carbon Free Grid .. Possible Futures

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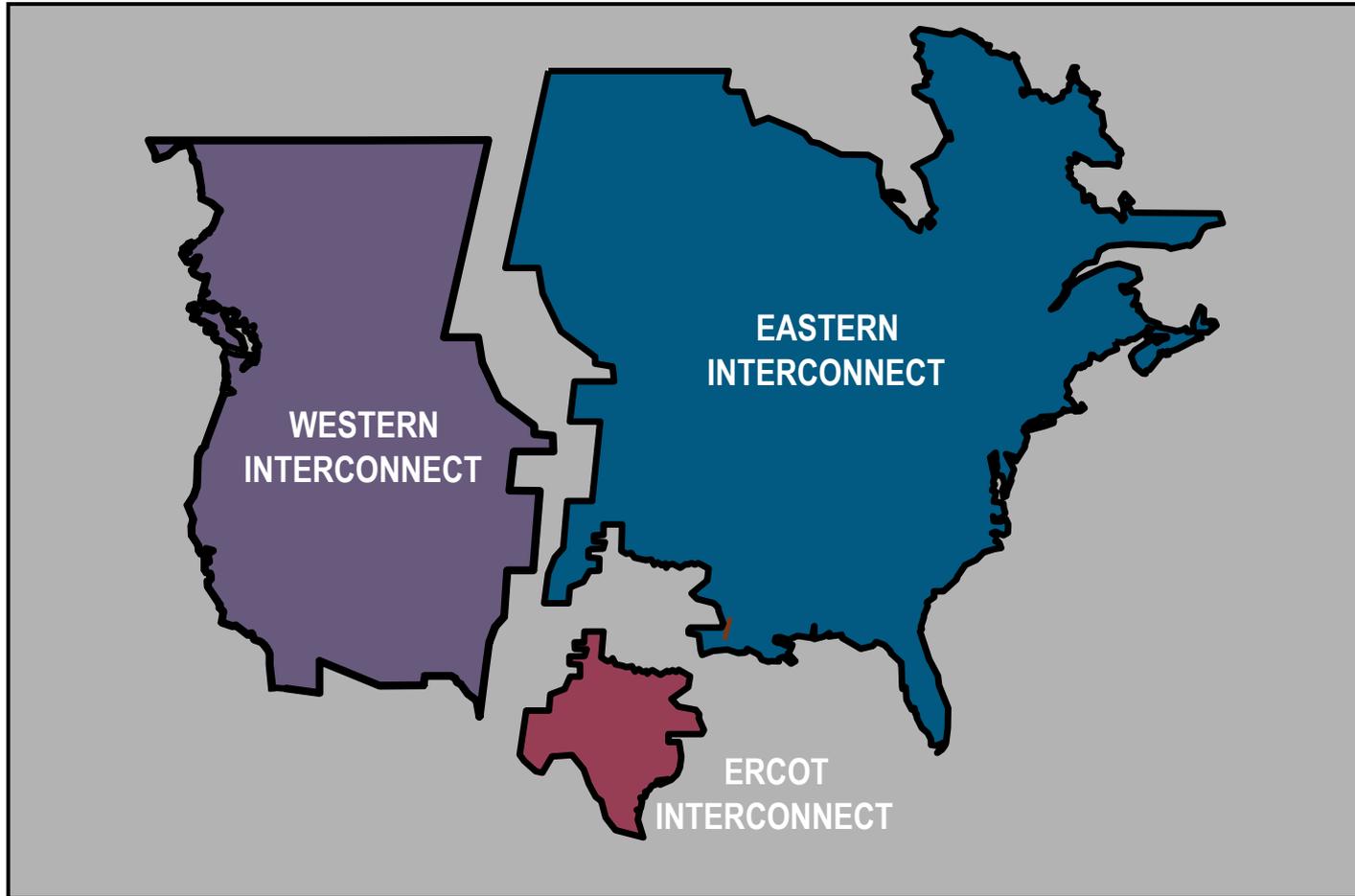
California Energy Commission “Scenarios” *Project - Purpose*

This scenario project is designed to:

- ▶ **Develop a greater understanding of the actions believed to be needed to achieve major reductions in green house gases (GHG) for the electricity sector,**
- ▶ **Understand at least some of the consequences of these actions, and**
- ▶ **Permit some degree of trade-off comparisons.**

- ▶ **Project was originally an extension of the Clean and Diversified Energy Advisory Committee (CDEAC) of the Western Governors [Committee was created to respond to Governors request regarding feasibility of 30,000 MW new renewables by 2015]**

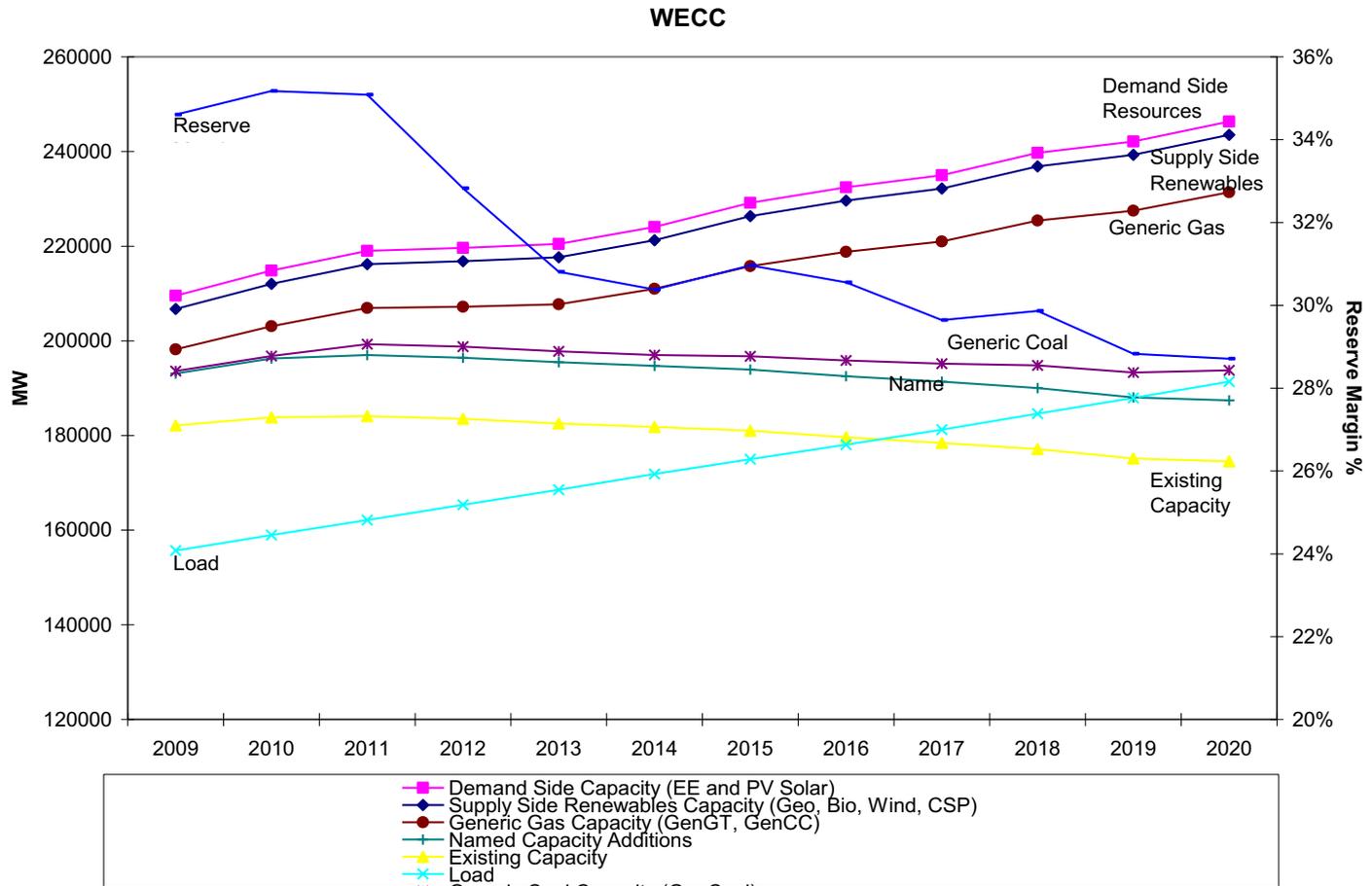
The Three Interconnects



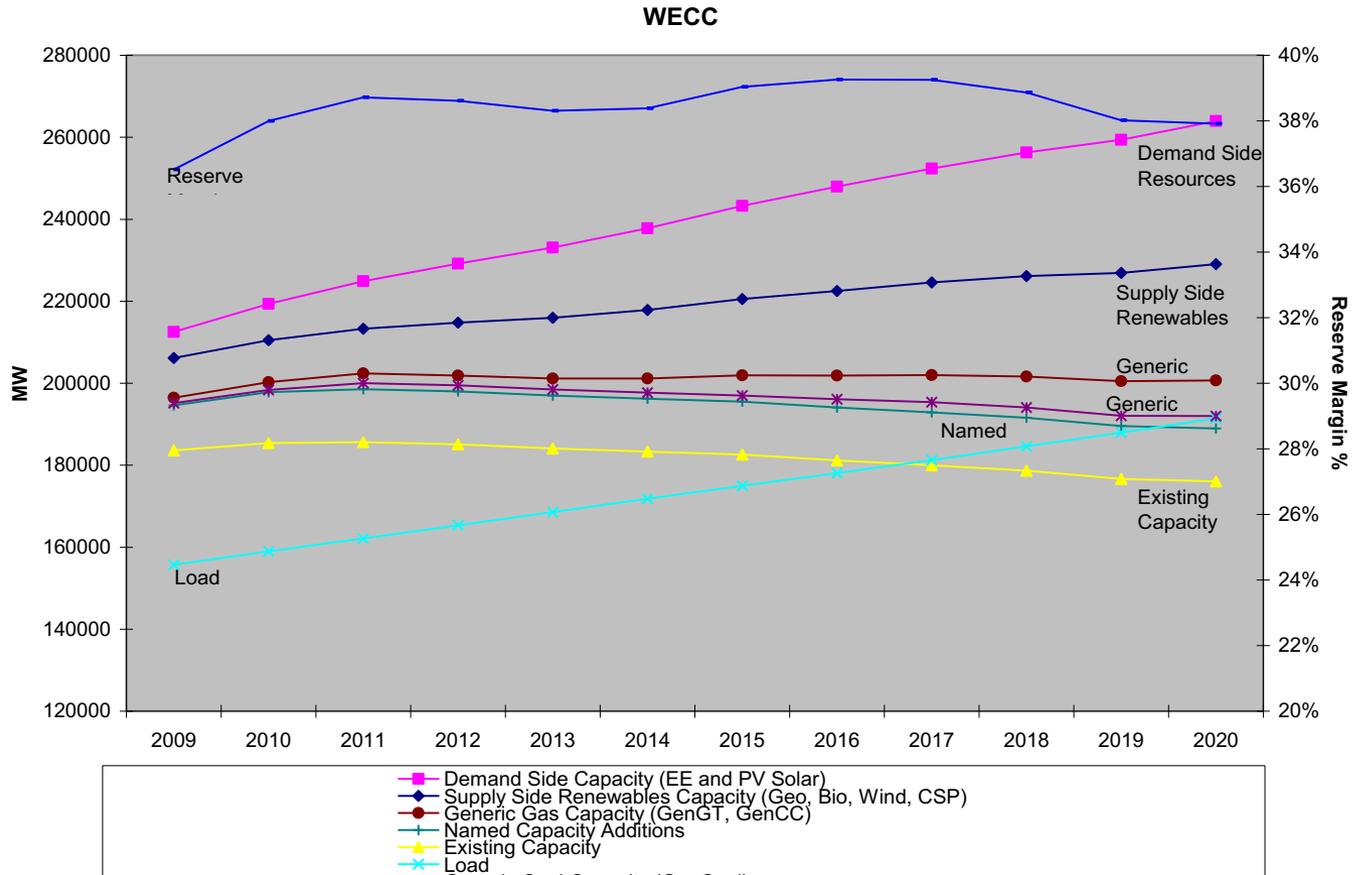
CEC Scenarios –

- ▶ **Case 1 - Current conditions extended into the future**
- ▶ **Case 1B - Compliance with current requirements**
- ▶ **Case 2 - High sustained natural gas and coal prices**
- ▶ **Case 3A - High energy efficiency in California only**
- ▶ **Case 3B - High energy efficiency throughout the West**
- ▶ **Case 4A - High renewables in California only**
- ▶ **Case 4B - High renewables throughout the West**
- ▶ **Case 5A - High energy efficiency and renewables in California only**
- ▶ **Case 5B - High energy efficiency and renewables throughout the West**

Case 1 Load/Resources



Case 5b Load/Resources



Concluding Thoughts

- ▶ Renewables are in great demand based on RPS but...
 - ▶ Renewable targets today have economic out criteria
 - ▶ Renewables continue to be expensive
 - ▶ Federal Subsidies vs mandatory requirements vs not getting it done
 - ▶ How will emerging CO2 rules change the decision process?
- ▶ Technically a clean, reliable power supply that can meet plug in hybrid needs and CO2 targets in WECC seems possible but
 - ▶ It will be expensive
 - ▶ It will take a concerted effort on many fronts
- ▶ This study focused on the Western (WECC) geographic area, but it could be expanded for all of North America