Germany & The Czech Republic 2016 Study Travel Project Mission Statement

The passage of Senate Bill 350, the Clean Energy and Pollution Reduction Act of 2015 directs California agencies and utilities to once again lead the US in not only energy efficiency but also achievement of a new and challenging Renewable Portfolio Standard (RPS) target of 50%.

In November of 2016 the California Foundation on the Environment and the Economy (CFEE) a NGO, will lead a study tour through Germany and the Czech Republic to explore the European Union's experience with grid reliability while in the process of substantially increasing the percentage of energy from renewable sources. Due to the fluctuation in wind and solar energy generation the grid must be sufficiently flexible to adjust to intermittency and variability. Maintaining constant frequency and voltage within an acceptable range in a system composed primarily of slow acting fossil or nuclear base load facilities presents a new and increasingly difficult challenge.

The CFEE delegation will further explore the supporting yet declining roles of natural gas, petroleum and coal as the energy system evolves to a renewable-based system.

The shift from conventional sources to renewables raises critical market, engineering and commercial questions that must be addressed:

- What is the optimal size of the grid system to maximize the penetration of renewable energy?
- What are the goals of the creation of the Pan-European electricity market?
- What does this mean for standardization of connection conditions throughout the system?
- Is there a role currently for storage and at what cost? How long will it take before energy storage technology relieves pressure on potentially very expensive grid expansions?
- Is an expanded and more flexible grid system compatible with free market pricing for energy? What mechanisms need to be developed to ensure that conventional flexible generation, such as gas power plants, remain financially viable in the new environment?
- How can multiple grid balancing authorities coordinate demand and supply conditions in the face of intermittency and variability? Who makes the decision to curtail supply in the case of over generation and who pays?
- To what extent will micro-grids provide security and resilience for smaller jurisdictions that wish to be independent of a large complex grid market and at what cost in price and reliability?
- What is the role of distributed energy resources in transitioning to a renewable based system?

The CFEE delegation is seeking to meet with transmission grid management organizations, energy officials, private sector utilities and generators, as well and technical "think-tanks" involved in these market, engineering and organizational issues.