Developing Renewable Generation on State Property: Installing Renewable Energy on State Buildings and Other State-Owned Property

IEPR Committee Workshop on Localized Renewable Generation

California Energy Commission

May 9, 2011

Heather Raitt
Assistant Executive Director, Climate Change
Executive Office
hraitt@energy.state.ca.us / 916-654-4735

Renewables on State Property

- Potential benefits include:
  - Reduce existing energy costs in state buildings
  - Create new revenue streams by leasing vacant or unused lands and rights-of-way
  - Cost savings by eliminating the obligation to maintain lands leased to developers
  - Demonstrate the benefits of distributed generation to help spur larger-scale deployment
- The aim is to develop renewable resources on state property through existing programs and at no net increase in cost to the state.

This is a Joint Effort

- A memorandum of understanding between:
  - California Energy Commission
  - Department of General Services
  - Department of Corrections and Rehabilitation
  - Department of Transportation (Caltrans)
  - Department of Water Resources
  - Department of Fish and Game
  - California State Lands Commission
  - University of California
- Collaboratively study, plan, and develop energy generating infrastructure, coordinate consistent procurement strategies and contract language in requests for proposals, and develop one or more statewide solicitations to make properties available to interested developers in the future
- Others welcome to join!

Goal of 2,500 MW by 2020

Developed in consideration of:

- 33 percent by 2020 renewable energy mandate
- Governor Brown's goal of 20,000 MW of new renewable capacity by 2020
- Staff's inventory of the potential development on state buildings and properties
- Loading Order

State Property Category	Potential Renewable Generation Capacity (megawatts)*
State Buildings in Load Centers	14 – 26
State Property With Potential for Wholesale Generation	54.5 – 195
Land Lease for Wholesale Generation	14,460 – 26,030
Total State Properties Target	**2,500**

*Assumes 1 MW of photovoltaics can be developed on 5-9 acres.

State Activities Already Underway

- Department of General Services
  - tracking energy use at state buildings
  - has entered contracts to install 12.25 MW at California State University campuses and several state agencies
- Caltrans is pursuing the installation of PV along the California highway system
- Department of Water Resources
  - working with the University of California on a PV demonstration along the California aqueduct and next to a pumping plant
  - released a request for proposals for a wind energy system for at least 5 MW
  - established a program to review requests to lease qualified properties to install PV
- Department of Forestry and Fire Protection is investigating using wood wastes culled for fire management for electricity generation

State Activities Already Underway

- Department of Corrections and Rehabilitation
  - has two 1 MW PV ground-mounted solar arrays and contracts to expand to nearly 23 MW
  - identified 20 locations for ground-mounted systems from 1 - 20 MW
  - is exploring roof-mounted PV, wind, and wholesale distributed generation
- State Lands Commission
  - manages thousands of acres of “school lands” as a revenue source for the State Teachers’ Retirement Fund
  - is focusing on utility-scale development rather than DG
- University of California
  - committed to installing 10 MW of onsite renewable energy by 2014
  - currently has 6.3 MW of onsite PV installed or under construction
  - will have 6.2 MW of biogas-powered generation installed by the fall of 2011

Barriers and Solutions to Distributed Generation

Economics

- High upfront costs and transaction costs and state management costs such as contracting issues can affect project feasibility.
- Net energy metering, feed-in tariffs, state and federal incentives, and RD&D help bring down the costs.
- Staff's inventory work and efforts to provide developers with detailed information about buildings is aimed at reducing cost.

Integration

- Intermittent solar and wind pose challenges to grid operations.
- Storage, smart grid, demand response, improved forecasting can help.

Barriers and Solutions to Distributed Generation

Interconnection

- Managing the interconnection requests of large numbers of small renewable projects is challenging.
- The process depends on where the project connects, whether it serves on-site load or produces energy for wholesale, and the size of the project.

Permitting

- State agencies regulate the private use of state land through permitting authority established by statute, but state agencies need to ensure that projects are consistent with local requirements.
- Projects are subject to compliance with the California Environmental Quality Act although categorical exemptions may apply.
- Permitting is expected to be a challenge for larger-scale projects.

Inventory

State buildings in load centers

- Staff collected data on clusters of buildings in 7 load centers near existing distributions lines, and for buildings not in load centers that have high on-site load such as correctional facilities, state hospitals, and developmental centers.
- Excluded sensitive lands and areas with existing projects.
- Collected monthly and annual metered load and utility billing data.
- Estimated square footage of rooftop and parking lot space. For roofs, staff subtracted out obstructions and north-facing pitched roof area.
- Staff estimated the total potential PV capacity that could be developed based on available space and the load of the building.
- Staff estimated 16.2 MW could be rapidly deployed on rooftops and parking lot spaces.

Inventory

State property with potential for wholesale

- Separately inventoried Department of Corrections and Department of Mental Health facilities with properties that could be developed to serve onsite load and produce energy for wholesale.
- Department of Corrections assessed land outside fenced areas and excluded areas with insufficient interconnection opportunities, poor topography, or environmental sensitivity.
- Potential ground mounted PV capacity is about 50 to 200 MW

Inventory

Other state property with potential for wholesale

- Staff estimate area available at aqueduct siphons and pumping plants, excess lands, other state lands, and highway intersections.
- Staff estimated that parcels 200 acres and smaller could support wholesale distributed generators. Parcels over 200 acres could support utility-scale renewable projects.
- The majority of land available for lease for wholesale generation is on large parcels that may support utility-scale projects.
- Rough estimate of technical potential is 14,460 – 26,030 MW of PV.
- Staff identified about 100 parcels that could support wind development and estimated 1,900 MW of potential.
- Much more work is needed to determine suitability for developing these parcels.

Next Steps

- Work with additional agencies interested in joining the MOU
- Continue to refine inventory
- Work with Department of General Services to develop a request for proposals to develop renewables on state buildings
- Conduct preliminary screening and environmental analysis to determine which state properties may be suitable for development
- Consider public comment and feed results of this report into the IEPR analysis of renewable generation and transmission