



# HIGH PENETRATION PV INITIATIVE

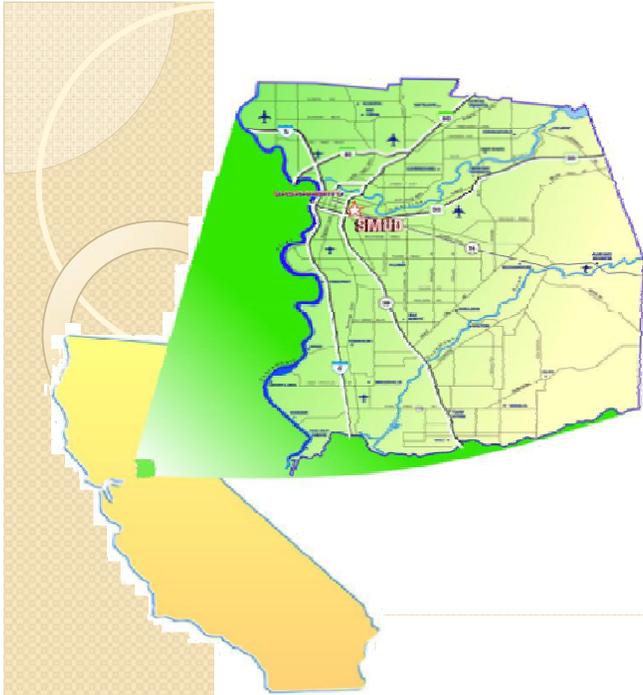
## Project Overview and Status

Elaine Sison-Lebrilla  
Sacramento Municipal Utility District

Status Update Meeting  
April 20, 2012



Hawaiian Electric Company  
Maui Electric Company  
Hawaii Electric Light Company



# SMUD

- Publicly Owned (Sixth Largest in U.S.)
- Service area of 900 square miles, serving 1.4 Million (Sacramento County and parts of Placer)
- Nearly 600,000 Residential, Commercial and Industrial customers

## Hawaiian Electric Companies

- HEI family of regulated utilities, providing energy for 5 islands for over 100 years
- Hawaiian Electric Utilities (HECO/MECO/HELCO) serve 95% of the state's 1.2 million residents on the islands of Oahu, Maui, Lanai, Molokai and the Big Island of Hawaii.





# SMUD/HECO High Penetration PV Initiative (HiP-PV)

## Goal:

Enable appropriate capability to reliably plan and operate with high penetration of variable renewable resources on the grid especially during high impact conditions (e.g. variable weather, peak loads, minimum loads, contingencies)

## Objectives:

- Inform and pilot the development of visual tracking, field measurement and validated analytical capability including hardware and software to evaluate the impact of high penetrations of PV systems on our grid
- Transfer of lessons learned to other utilities



# Project Team & Approach

Task 1: Project Management

Task 2: Baseline Modeling of SMUD and HECO Systems

Task 3: Field Monitoring and Analysis

Task 4: Visualization Effort

Task 5: Solar Resource Data Collection & Forecasting



**SMUD**<sup>TM</sup>



Hawaiian Electric Company  
Maui Electric Company  
Hawaii Electric Light Company

NEO  
Virtus  
Engineering, Inc



GO  
solar  
CALIFORNIA



**Itron**



**B+W**  
ENGINEERING  
a DNV company



# Project Status

- Project Management – in progress
- Baseline Modeling – complete
- Monitoring and Analysis – experienced delays
- PV Inverter Communications – initiation activities
- Visualization Tools – in progress
- Solar Data and Forecasting – sensors deployed, data collection and forecasting activities in progress

# Budget Status

CPUC Grant	\$2,073,232
Match Funding	\$1,623,859

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Grant Spent	40%
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Match Spent	51%
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# Next Steps

- Continue Project Management
- Baseline Modeling – complete
- Continue Monitoring and Analysis

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- Implement PV Inverter Communications activities
- Continue development Visualization Tools
- Continue data collection and forecasting activities
- Request for one year, no-cost time extension

# Detailed Presentations

Presentation	Presenter
Task 1: Project Overview & Status	SMUD
Task 2: Baseline Modeling & Task 3: Field Monitoring & Data Analysis	HECO, SMUD, BEW
Task 3.3: Inverter Communication	SMUD
Task 4: Visualization Pilot	HECO
Task 5: Solar Forecasting	NEO Virtus