

VOLTRON-Enabled Transactive Resources at the University of Washington

Kevin Morrissey

Miguel A. Ortega-Vazquez

Daniel S. Kirschen

Tu Nguyen

Remy Rigo-Mariani

Agata Swierc

VOLTTRON at UW

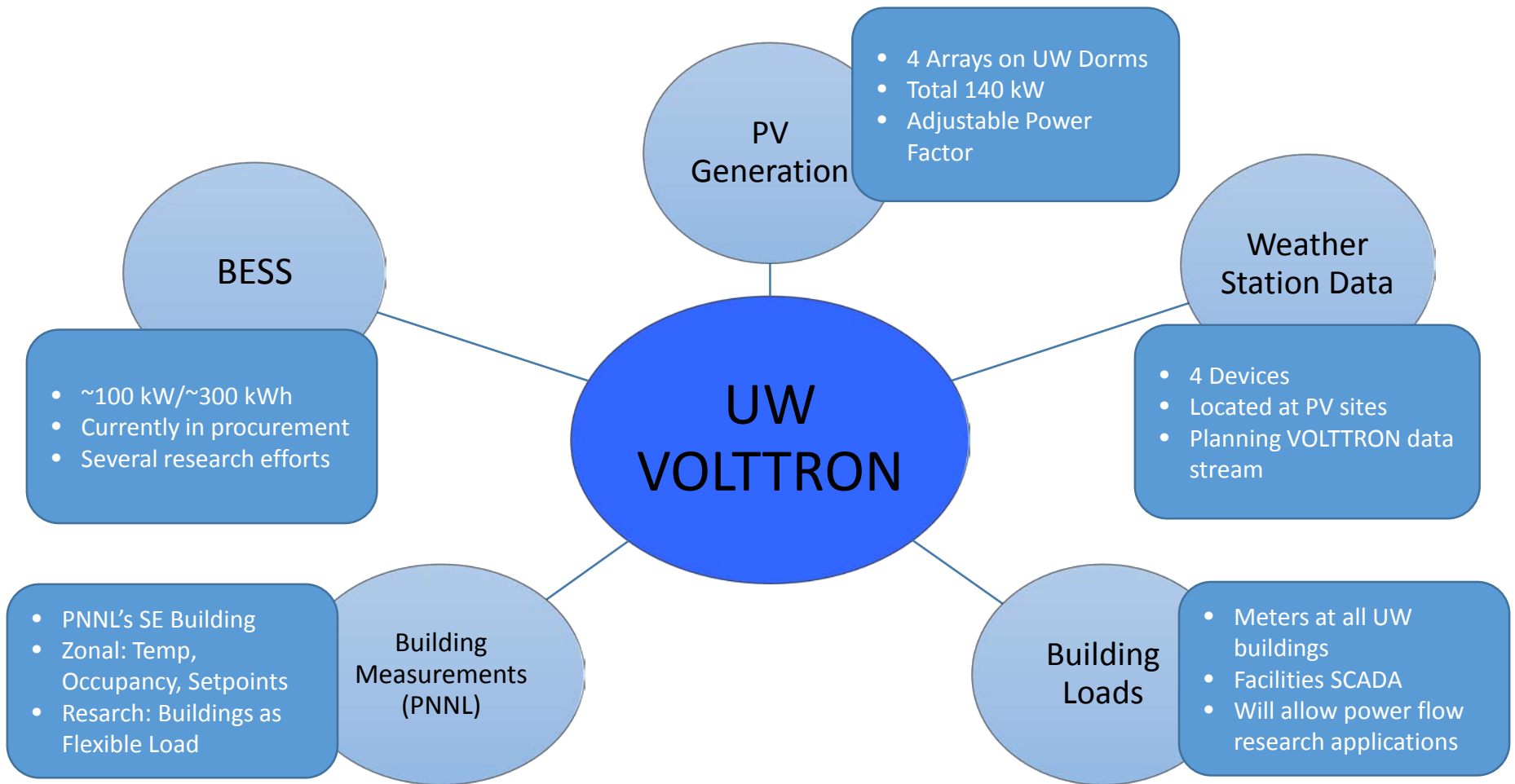
UW has been involved with VOLTTRON since 2015

- Clean Energy and Transactive Campus project (CETC)
 - Joint project between UW, PNNL, and WSU
 - Goal: establish a testbed for transactive energy research
 - Funds energy resource installation & research at UW
- BIRD-IP fellowship awarded to Kevin Morrissey
 - Goal: investigate PV smoothing in VOLTTRON
- Partnership with UW Solar (student-run)
 - Fund, install, and operate PV resources on campus dorms

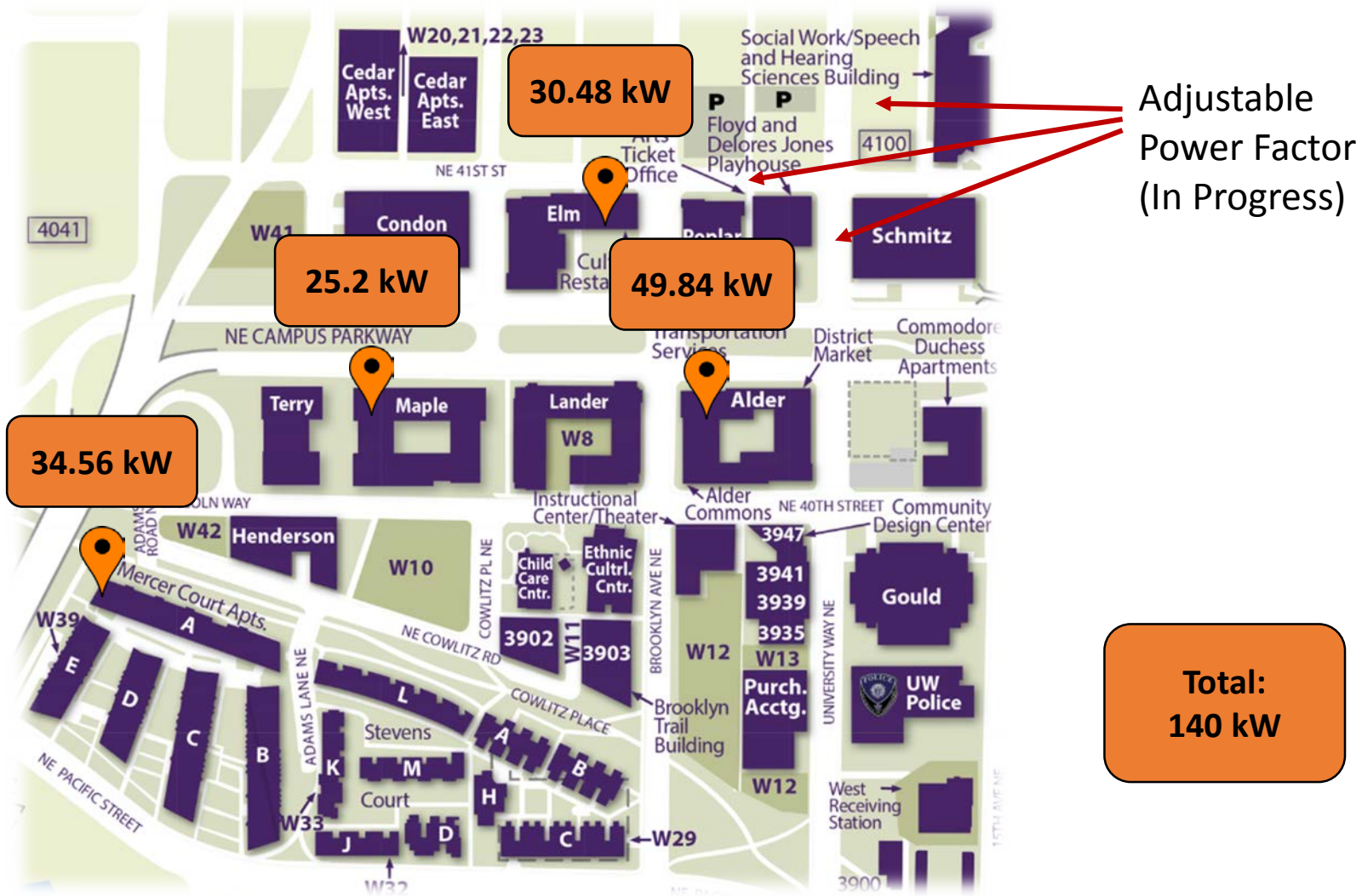
UW VOLTTRON System Overview

VOLTTRON-Enabled Transactive Resources at the University of Washington

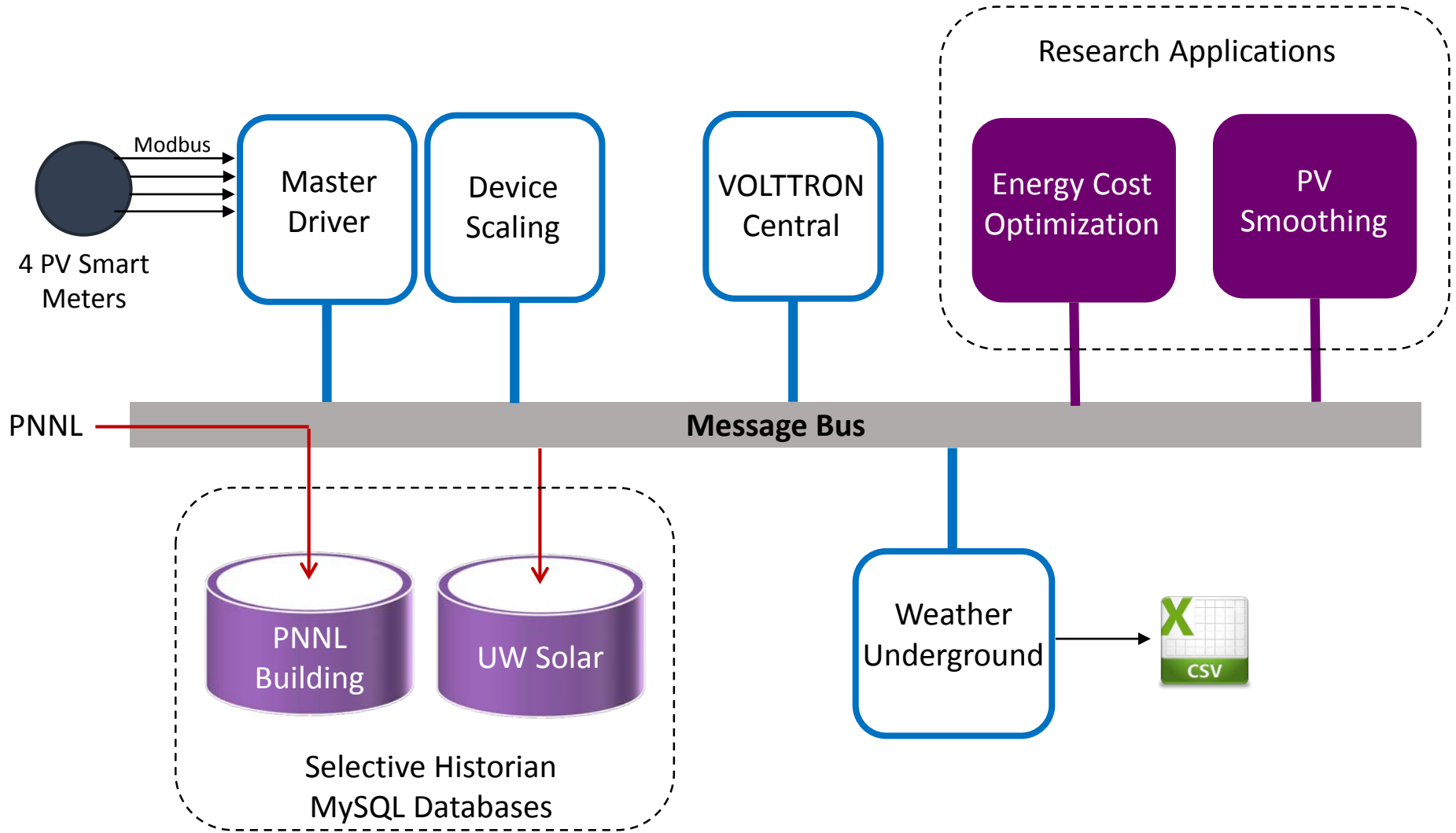
Distributed Energy Resources at UW



UW Solar PV Arrays



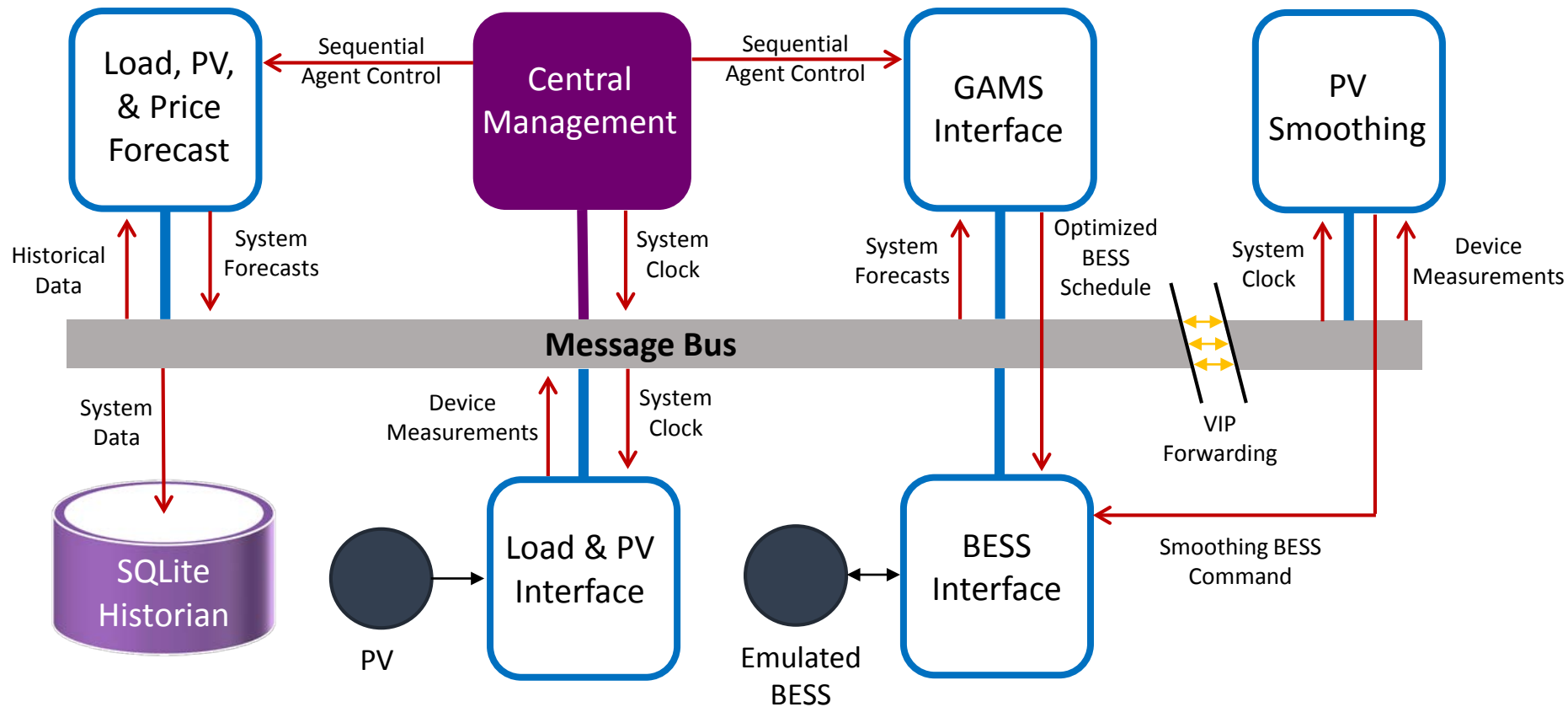
UW VOLTRON System



VOLTTRON Applications

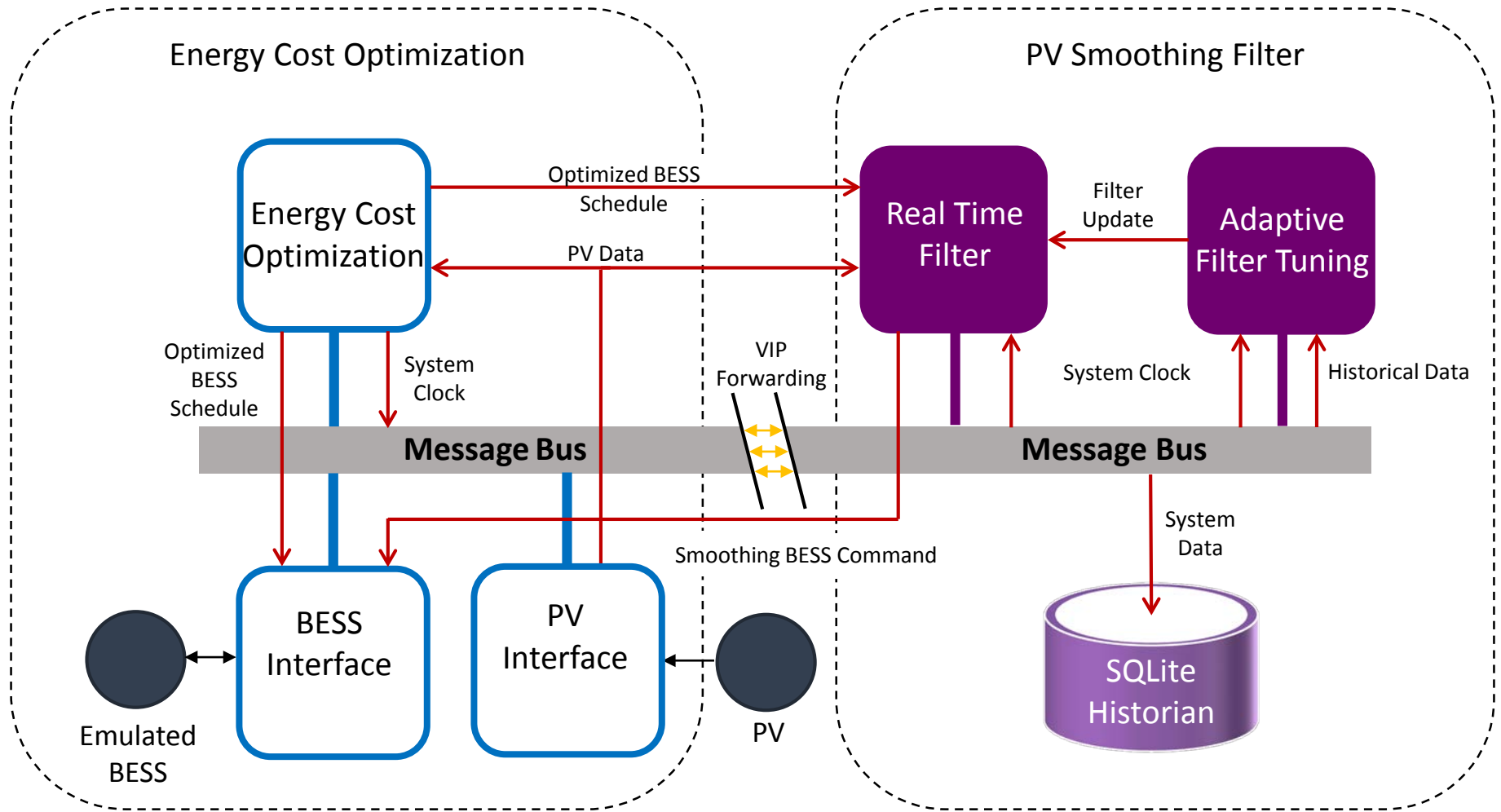
VOLTTRON-Enabled Transactive Resources at the University of Washington

Energy Cost Optimization



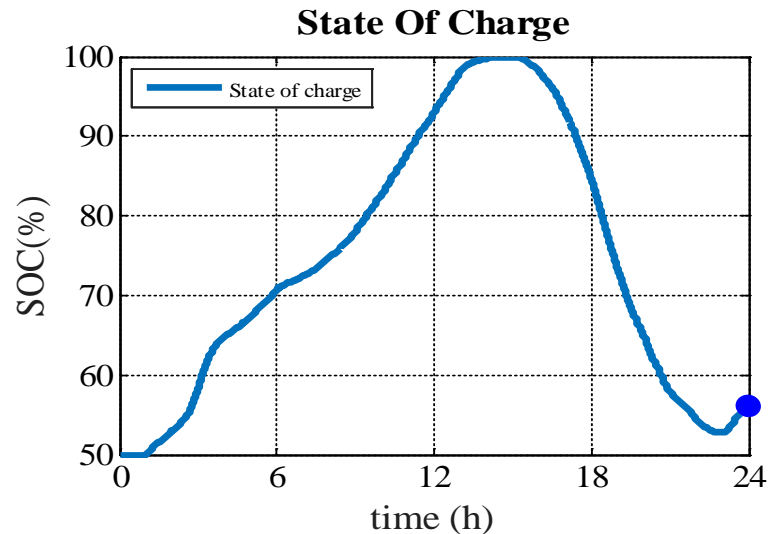
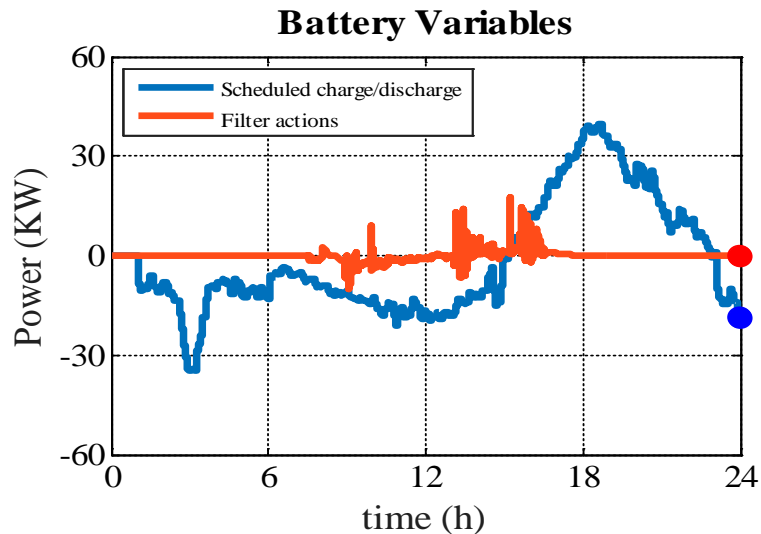
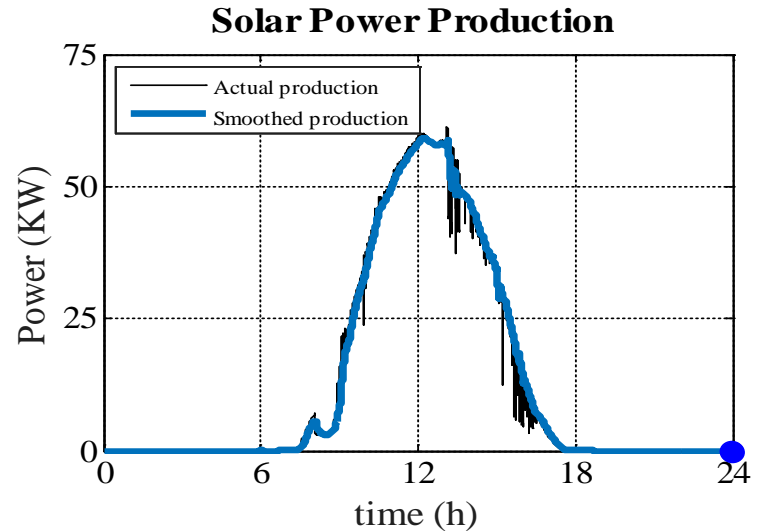
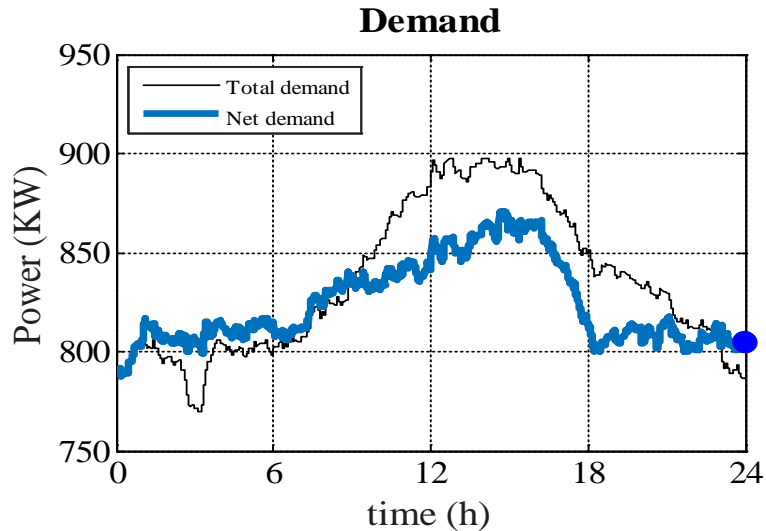
→ Published topics to Message Bus

PV Smoothing Architecture



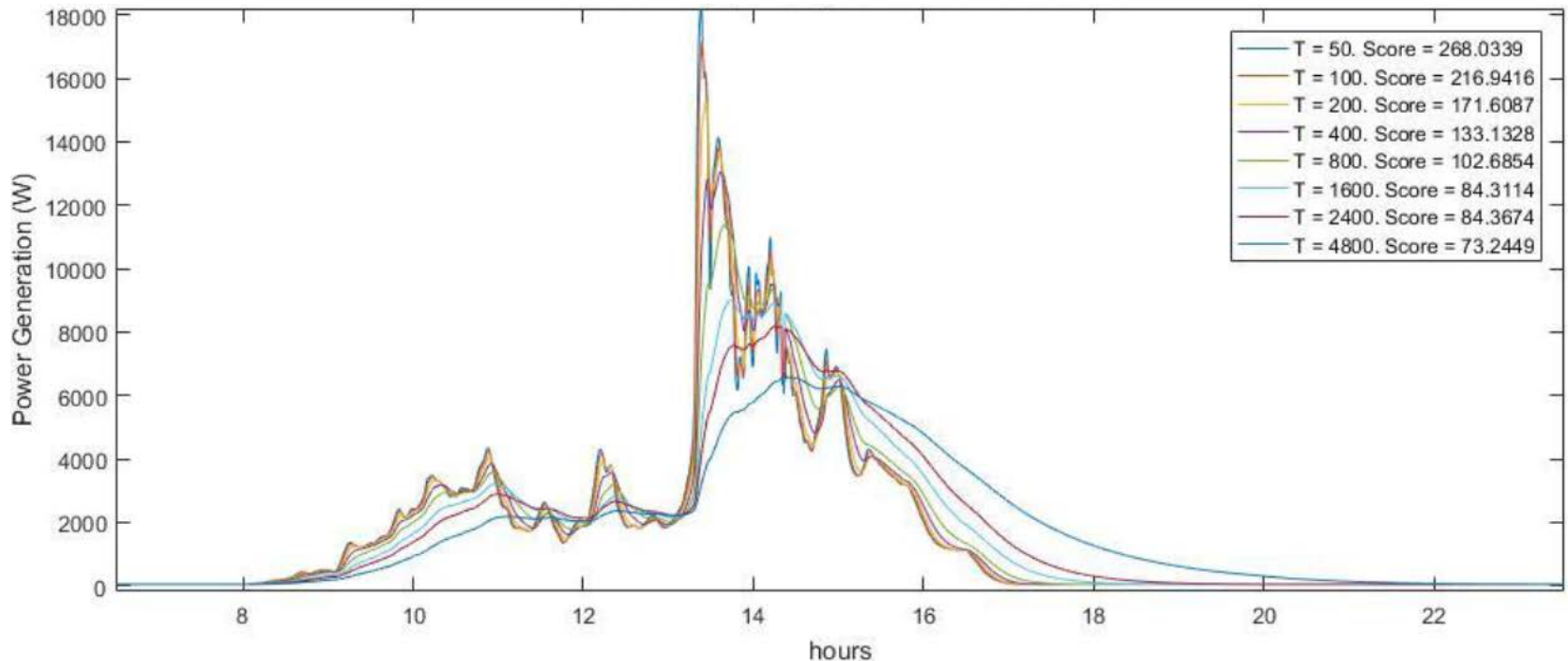
→ Published topics to Message Bus

Combined System Operation



BESS as an active filter

- Varied the aggressiveness of the filter
 - Smoother result requires dedicating a larger share of BESS capacity for filtering



Questions?

