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Next Generation Near- and Long-term Wildfire Risk Forecast Models for Enhanced Electricity Grid Resiliency and Public Safety

CEC# EPC-18-026

IEPR Lead Commissioner Workshop
August 8, 2019

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Spatial Informatics Group

Motivation

- Extreme wildfire events threaten public and integrity of electricity grid

- Impacts to grid have increased costs, reduced safety and reliability to ratepayers

- Science lacks underlying information to forecast risk
  - o Current models cannot predict fire behaviors from large dead trees and duff fuels.
  - o Fire-weather forecast underestimate extreme weather events
  - o Models unable to forecast mid- to late-century fire risk

- IOUs need improved forecast capabilities to mitigate wildfire impacts

Improving Situational Awareness of Anticipated Extreme Fire Weather & Tree Mortality
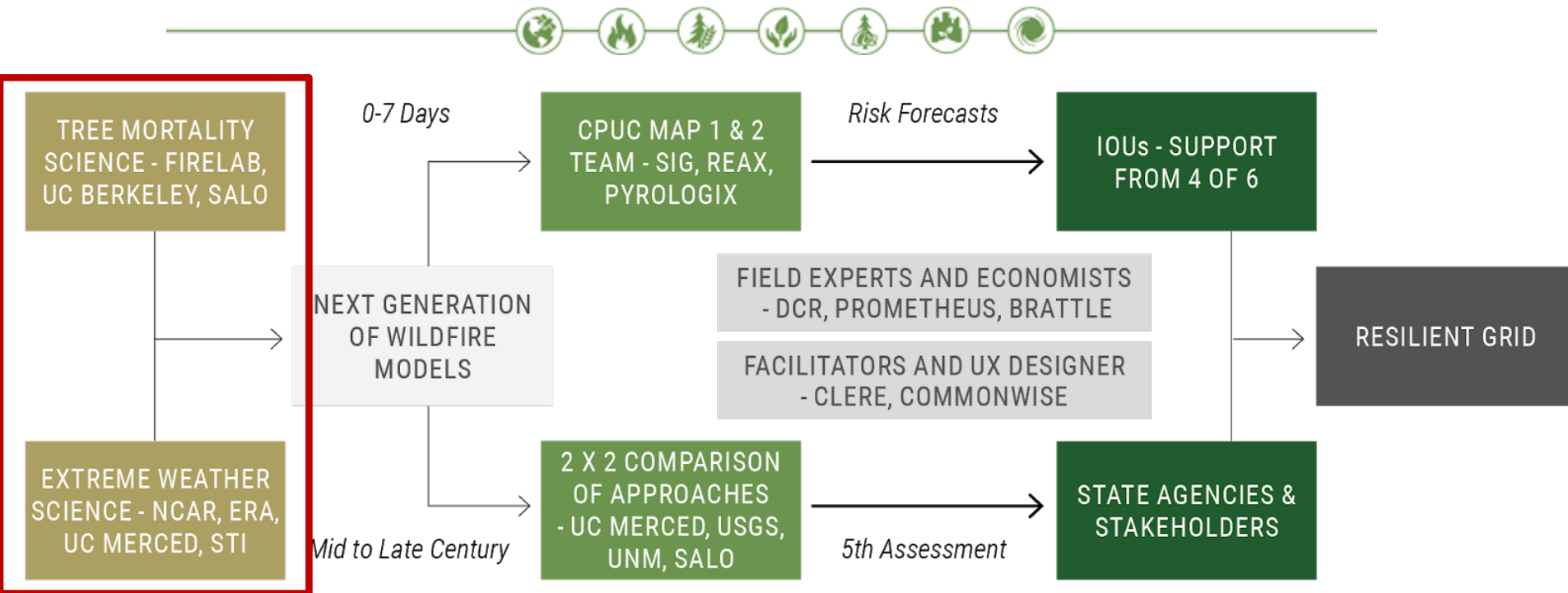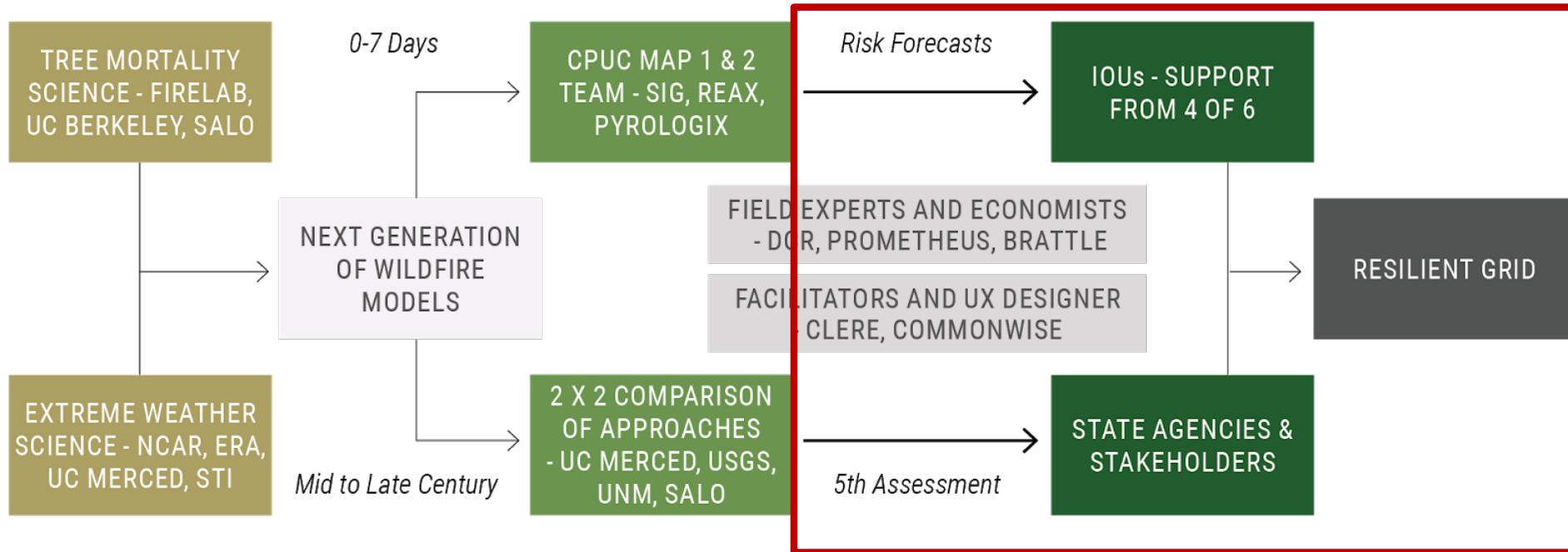

- Optimal Configuration of Weather Stations
- Analysis of Past Extreme Weather Events
- Tree Mortality Analysis & Mapping

Integrating New Science into Near-Term Forecasts and Long-Term Projections
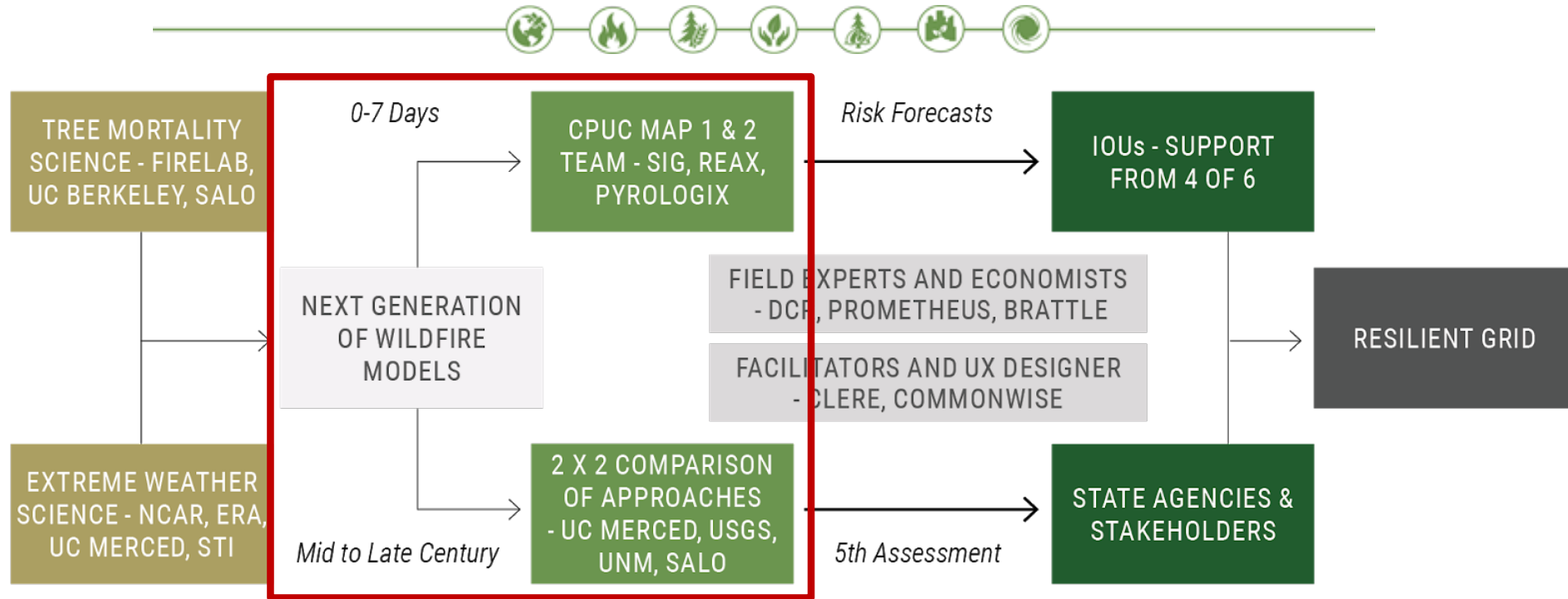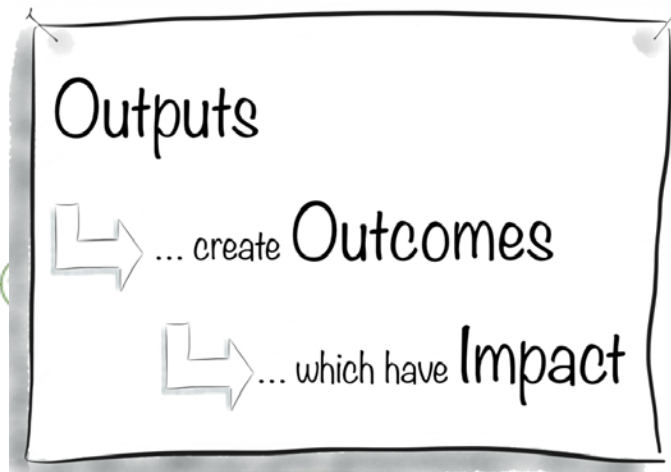

- Near-term Risk Forecast Model
- Long-term Fire Risk Models
- User Needs Engagement Workshops

Models at Multiple Time Scales to Provide Actionable Information

- Near-term Wildfire Risk Forecasting Tool (0 to 7 days)
- Long-term Wildfire Risk Projections (mid-century) into 5th Assessment and IOUs Wildfire Mitigation Plans.
- User engagement workshops continued

Key Outputs

Outputs
... create Outcomes
... which have Impact

- **Weather Station** Siting Framework

- **Extreme Weather** Historical Analysis Report and Data Archive

- State of **Wildfire Science** Report

- Contemporary **Tree Mortality** Report and Data Archive

- **Near-term Forecast** Modeling Framework, Data Archive, Decision Support Tool

- **Cost-benefit** Fact Sheets

- **Long-term Risk** Projects Modeling Framework, Data Archive, Planning Support Tool

- **Near-term and Long-term Results Integration** with IOUs and California's Fifth Climate Change Assessment

- **Open-source code for all models**

Research Collaborators

Berkeley — UNIVERSITY OF CALIFORNIA

UNIVERSITY OF CALIFORNIA MERCED

UCAR — UNIVERSITY CORPORATION FOR ATMOSPHERIC RESEARCH

REAX ENGINEERING

STi

THE UNIVERSITY OF NEW MEXICO

SALO

FireLab — USDA Forest Service

USGS — science for a changing world

UNIVERSITY OF SAN FRANCISCO — CHANGE THE WORLD FROM HERE

UNIVERSITY OF CALIFORNIA SANTA BARBARA — LET THERE BE LIGHT

DEER CREEK GIS

PROMETHEUS™ Fire Consulting Services

PYROLOGIX

SCRIPPS INSTITUTION OF OCEANOGRAPHY — UCSD

THE Brattle GROUP

Lumen Energy Strategy