Energynet® Network Management Platform

Regional Impacts of Clustered Renewable Generation Projects

NEW POWER TECHNOLOGIES

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Potential Grid Impacts of DG

- **Local Grid/Distribution Impacts**
  - Unintended post-fault island
  - Overloaded equipment
  - Impacts on system protection
  - Voltage rise
  - Voltage fluctuation
- **Regional Grid/Transmission Impacts (?)**
  - Change in bulk power flow
  - Voltage impacts
  - PV coincidence/"geographic smoothing"

=> Each individual DG project of a particular size at a particular interconnection point has unique impacts.

=> Understanding regional impacts requires a deep *and* wide-area view.

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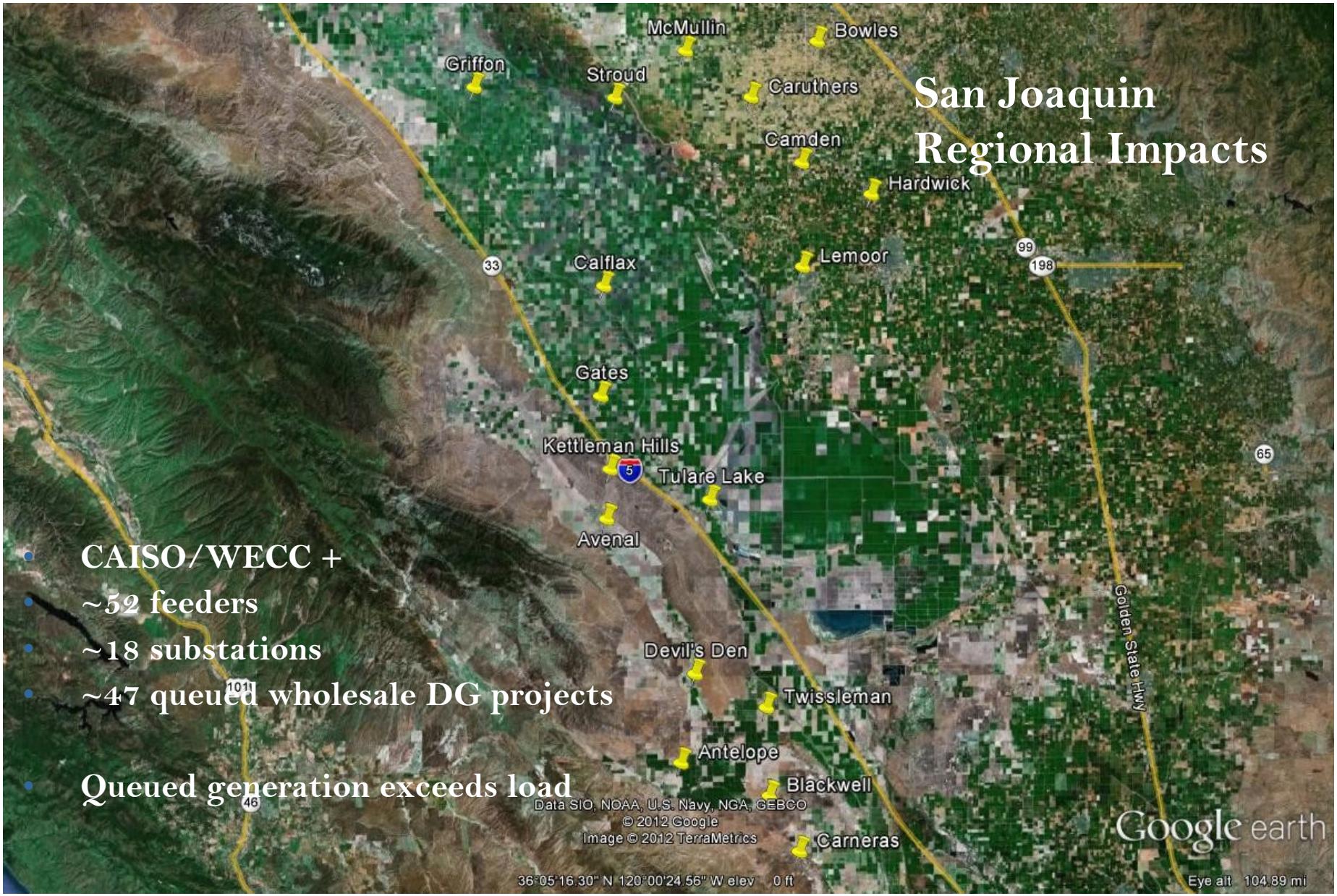
San Joaquin Regional Impacts



- CAISO/WECC +
- ~52 feeders
- ~18 substations
- ~47 queued wholesale DG projects
- Queued generation exceeds load

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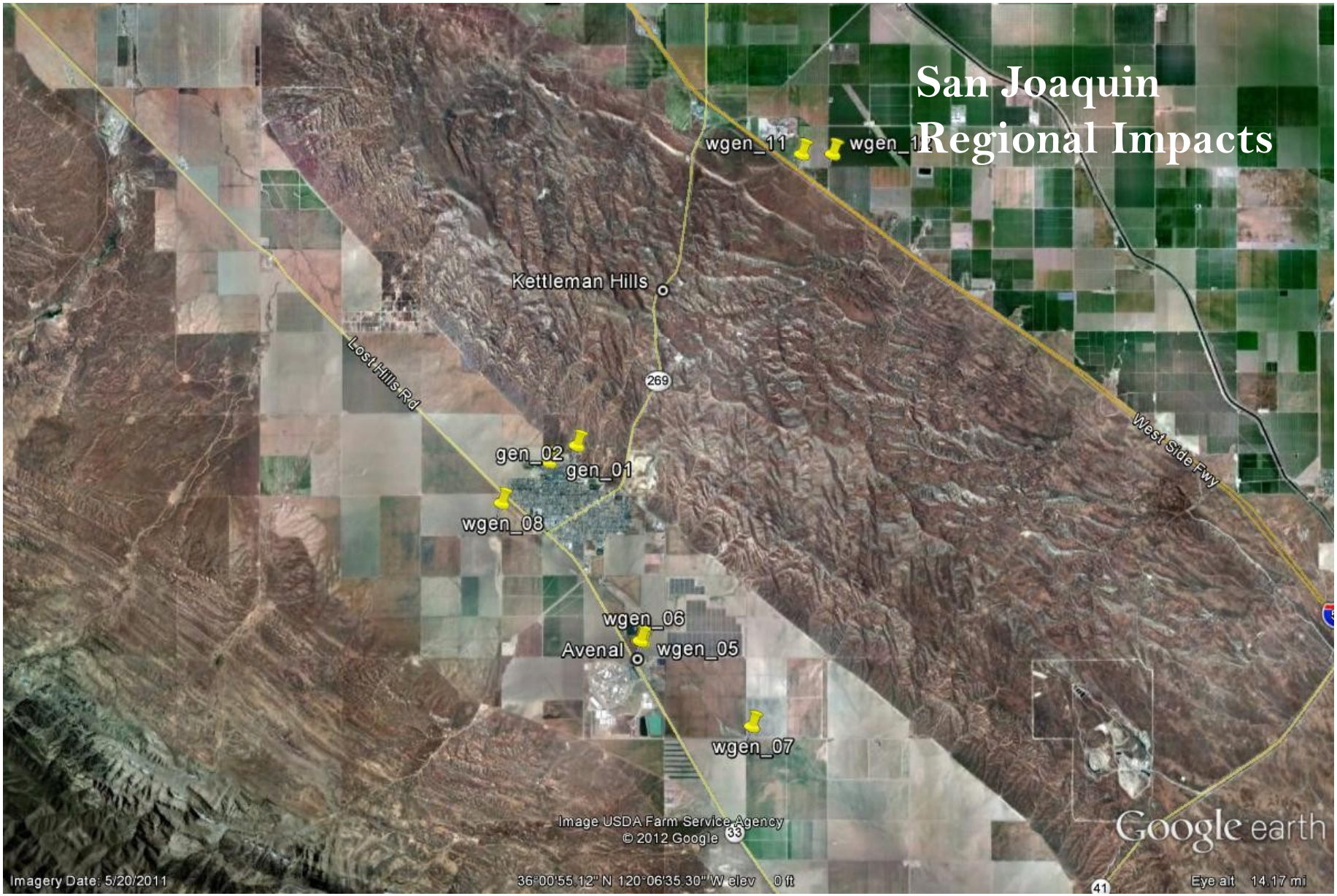
San Joaquin Regional Impacts



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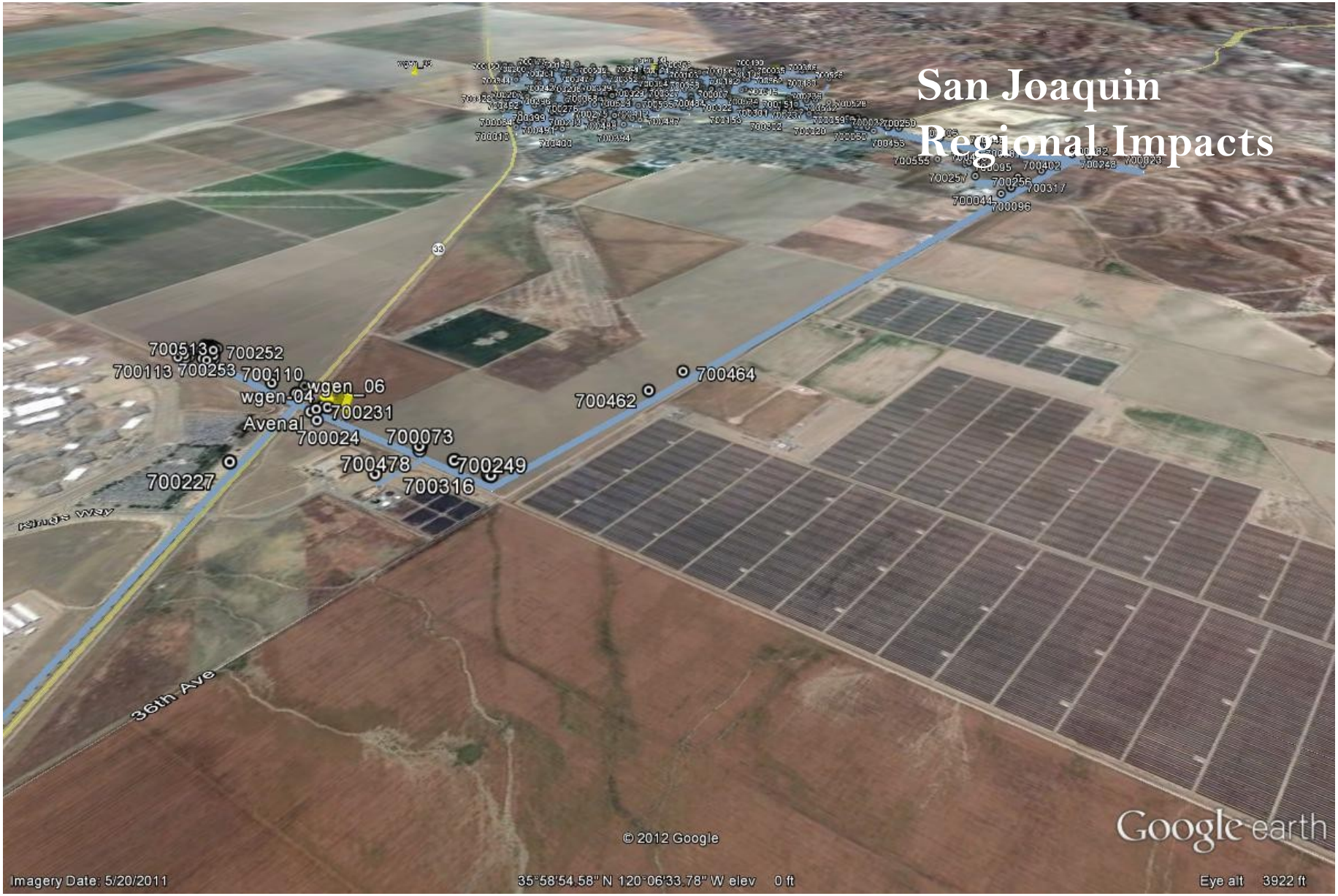
San Joaquin Regional Impacts



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Energynet Power System Simulation

- **High-definition visibility into direct impacts of individual DG projects and aggregate regional impacts**
- **Direct evaluation of any distribution or transmission upgrades**
  - What-if scenarios
  - N-1/contingency conditions
- **Leverage existing resources and infrastructure**
  - "As-is" legacy system data
  - Automated software-based model development and updates
  - Existing SCADA for validation
- **Preliminary utility DG interconnection evaluation with one click**

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