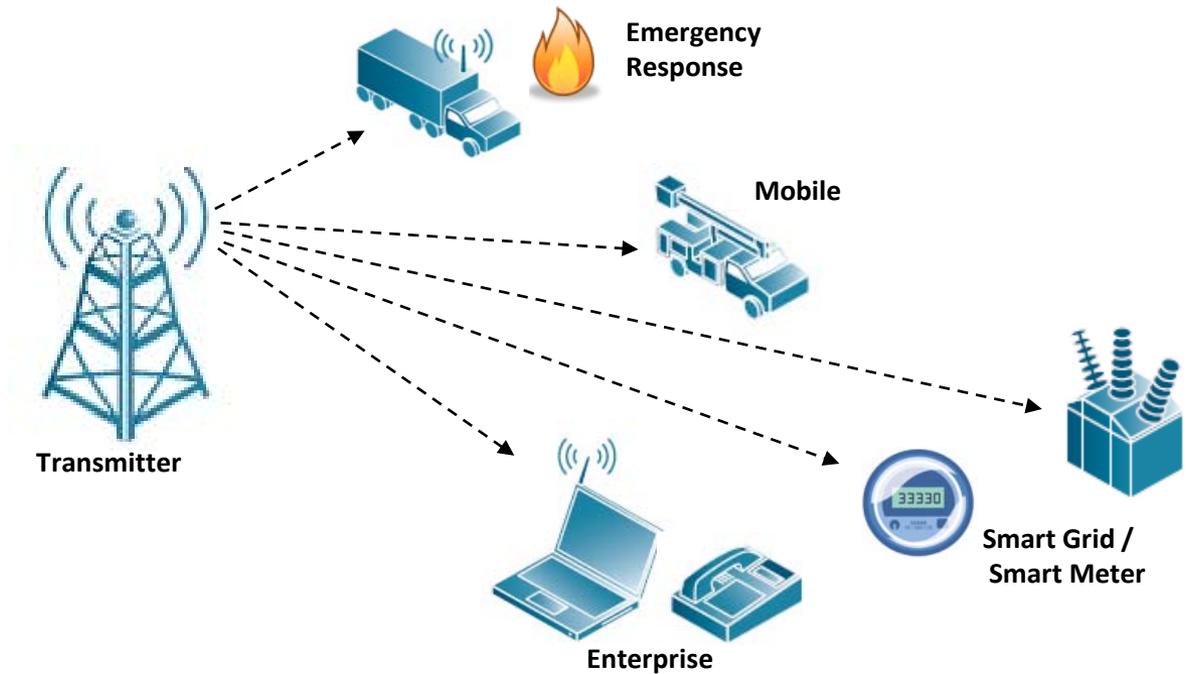


# Next-Generation Communications for the Smart Utility

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July 13, 2010





# Agenda

- Program Overview
  - Details
  - Architecture
  - Program Roadmap
- State and Federal Funding Summary
- Impacts
- What's Next/Potential Challenges
- Discussion
  - What SDG&E would do differently if federal dollars made available in the future
  - What SDG&E would suggest CEC do differently in the future

# Program Overview

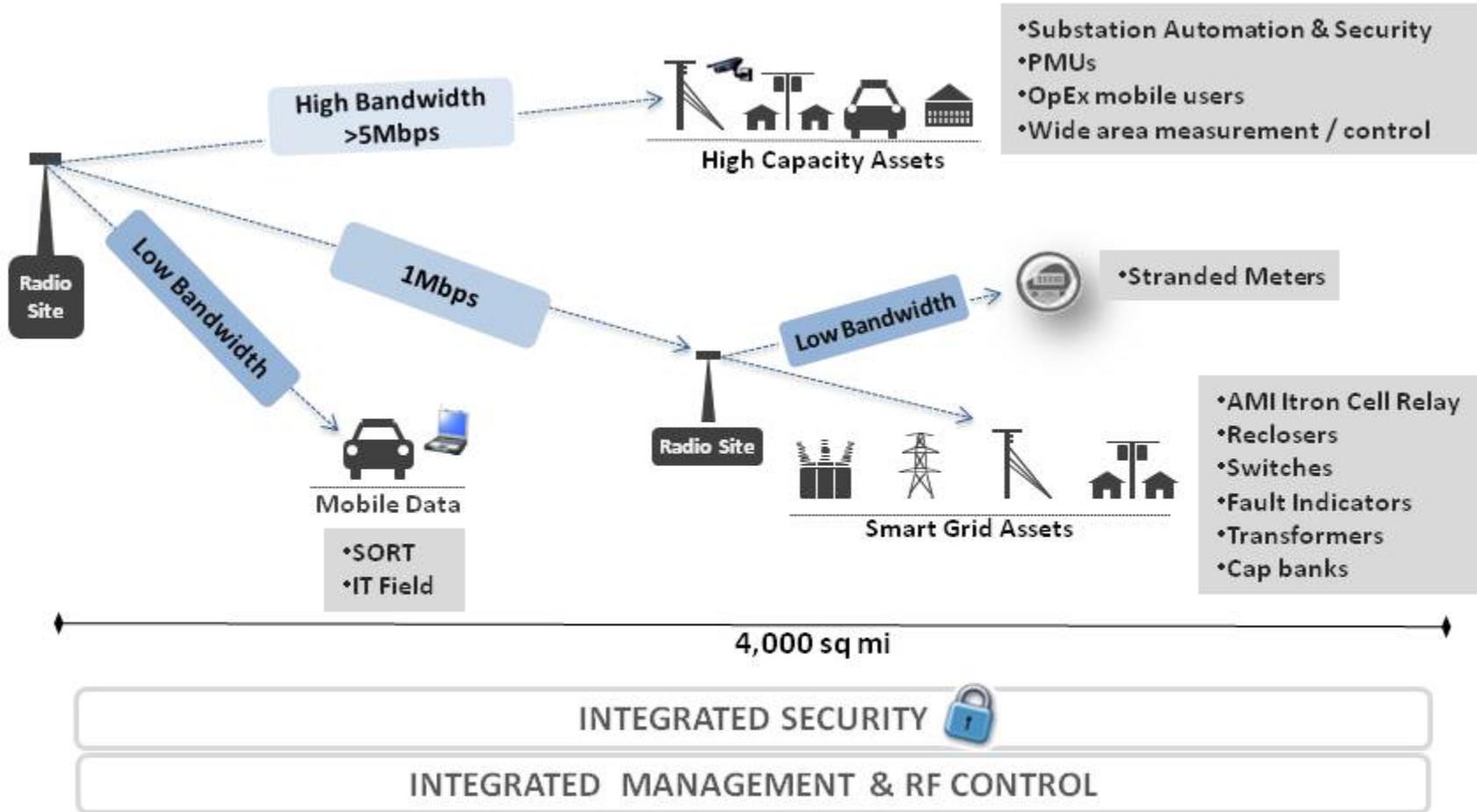
- **GOAL:** Provide reliable, secure wireless service to utility ops stakeholders
  - Smart Grid & Smart Meter
  - Customer Field Service
  - T&D Operations
  - Emergency Services
- **APPROACH:** Consolidate (integrate) previously dedicated RF systems into a general purpose private wide area wireless system
  - Use the right RF network for each application – (TCO, license, capacity, SLA)
  - **Integrate all RF services via a new Control Services layer**
  - Locate base stations where we have backhaul (not in the model-perfect location)
  - Use low-cost point-point RF to construct new backhaul (\$10-20K/link)
  - Use carrier services where practical in terms of cost and coverage
  - Facilitate integration with future (TBD) Smart Grid devices
- Provide low-to-moderate capacity pervasive wireless service coverage for all business locations, major grid assets and customer locations
- Provide high capacity wireless broadband wireless for selected locations



# Program Details

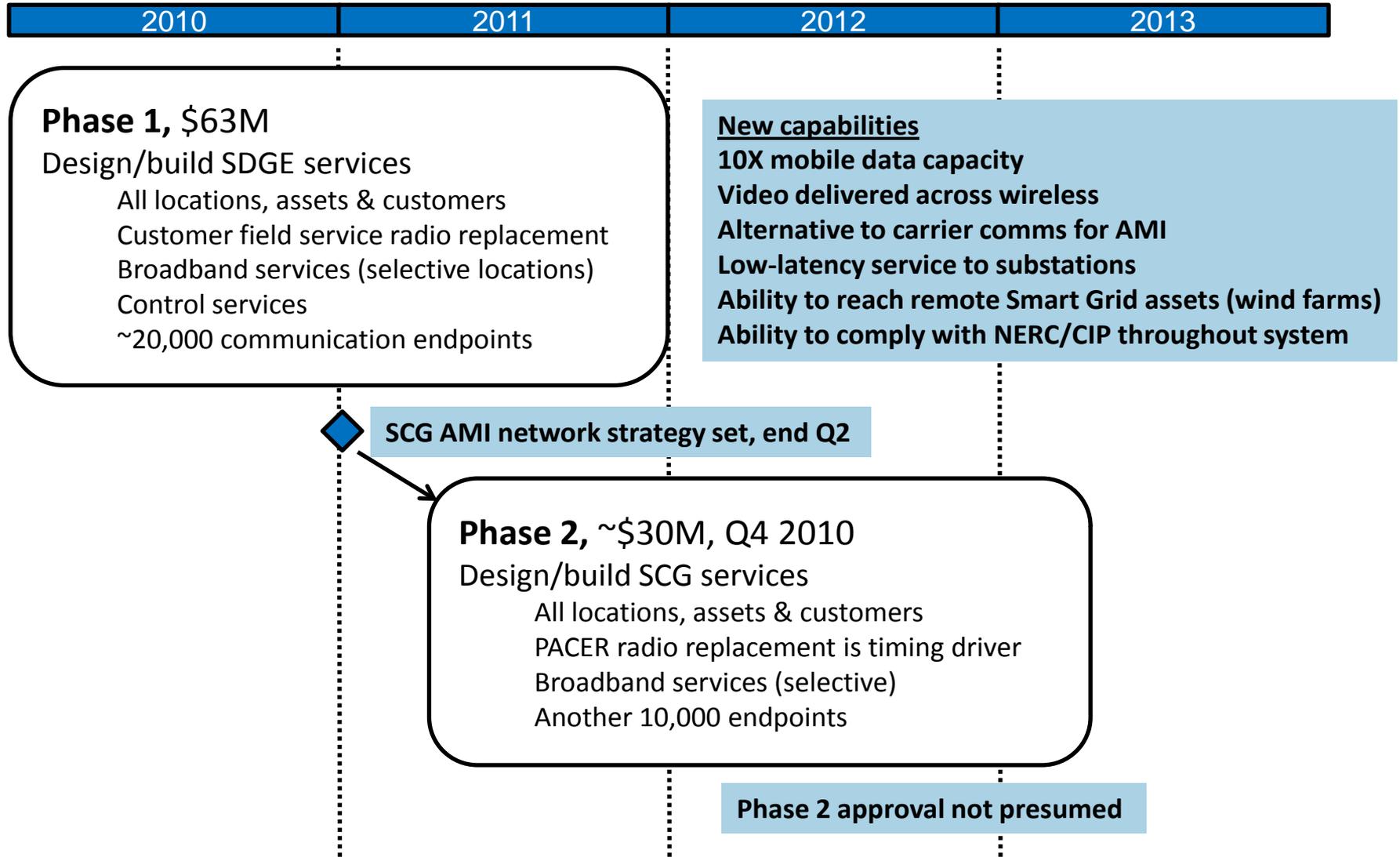
- **Foundation Services supporting fixed & mobile assets**
  - Fixed data service to endpoints or gateways with 900MHz for Smart Meter and Smart Grid devices
  - Mobile data service to radios in field service & emergency service vehicles
- **Broadband Services – 802.11n, 802.16d/e & (maybe) LTE – at major asset sites**
  - Services high-speed needs of mobile users using Wi-Fi, WiMax
  - Provide ~200 sub-stations with 5Mbps private backhaul
- **Control Services**
  - Integrate all radio network layers
  - “Single pane of glass” for configuration, security, audit, capacity/traffic management...
- **Migration Services**
  - Support transition of user base to new services, including endpoint installation

# Program Architecture



*Integrated, consolidated RF system replacing multiple standalone systems*

# Program Roadmap





# Funding Summary

- 7-year business case approved by Utility Board on 4/20/10 (covers SDGE only)
  - SDGE capital, \$34M approved
  - DOE SGIG \$28M matching grant agreement signed on 4/26/10
  - CEC PIER, \$1M agreement pending
  - TOTAL: \$63M 2-year capital program started April 2010
- First major supplier contract signing imminent – Foundation Services
- Work initiated on all program tracks
- Expect first production service in Q4 2010, completion in Q2-Q3 2012



# Impacts

## ■ Job Creation

- 7 full-time positions in the utility reported to date
- 83 full-time positions (utility and vendors) estimated during 2+ years

## ■ Environmental Impacts

- SDG&E Grid Communication System is an enabling technology to support multiple Smart Grid solutions for increasing RPS, reliability and new Smart Grid functionality
- Mobile system features and smart meter backhaul will reduce truck rolls in order to reduce greenhouse gas emissions



# What's Next / Potential Challenges

- Complete program staffing
- Implement DOE oversight & reporting
- Get key suppliers under contract
- Complete engineering on key integration solutions
- Get our users ready for the new system/service
- Build more detailed test/acceptance plan
- Build on the eventual SCG AMI network provider selection and integrate them into the architecture (Control Services)

# Discussion

## ■ Federal Stimulus Program

- SDGE would have built a similar smart grid-ready network, but it would have taken more time
- For future grant opportunities, we would likely create multiple narrowly-focused applications rather than one large smart grid project

## ■ CEC Matching Grant Program

- Recommend in the future CEC adopt a coordinated grant application process in order to sync state submission with federal submission
- Similarly coordinate reporting requirements on matching grants
- Reduce paperwork



# Thank You

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