

Joint IOU Research and Development Proposal with Lawrence Livermore National Laboratories

Overview of Proposal

- ffi PG&E, SCE and SDG&E propose the CPUC approve funding of up to \$152 million for a 5-year research and development (R&D) agreement with Lawrence Livermore National Laboratory (LLNL)
 - o PG&E: \$16.7 million/ year
 - o SCE: \$10.6 million/year
 - o SDG&E: \$3.1 million/year

- ffi The R&D agreement would provide the IOUs with access to LLNL's advanced computational and analytical capabilities to help address planning and operational challenges faced to implement California's Clean Energy Policy Plan

- ffi A goal of the project is to develop new tools and modeling capabilities in the areas of cyber security, electric resource planning (e.g., renewable integration), and electric and gas system operations

- ffi The agreement with LLNL would be governed by a Board of Directors, consisting of 5 voting members --- one member from each of the three IOUs, one from the CPUC and one from academia

- ffi The CAISO and CEC support this R&D initiative

LLNL's Capabilities

- ffi LLNL is a world class research institution and facilities
 - o 2,700 scientists and engineers
 - o Terascale Simulation Facility
 - o High-Explosives Application Facility
 - o National Atmospheric Release Advisory Center

- ffi Livermore Valley Open Campus

- ffi Improving U.S. competitiveness

Benefits to Customers

- ffi Improve understanding of renewable integration requirements and associated resource need from application of advanced tools and modeling
 - o Improved reliability or potential cost savings, for example
 - o Fewer resources to meet renewable integration needs: \$552 million in illustrative savings*
 - o Improved estimates of load following capabilities: \$30 million/year in illustrative savings*

- ffi Enhanced reliability, safety and security

- ffi Facilitate implementation of California's energy policy goals
 - o Renewable integration
 - o GHG emission reductions
 - o Distributed generation
 - o Smart Grid

- ffi Each research project must be authorized by the Board of Directors to ensure it provides sufficient customer value and does not duplicate other R&D efforts

* Rebuttal testimony, pages 3-4 to 3-5

Application 11-07-__

Filed July 18, 2011

APPLICATION OF PACIFIC GAS AND ELECTRIC COMPANY (U 39 M),
SAN DIEGO GAS & ELECTRIC COMPANY (U 902 E),
AND SOUTHERN CALIFORNIA EDISON COMPANY (U 338 E)
FOR AUTHORITY TO INCREASE ELECTRIC RATES AND CHARGES
TO RECOVER COSTS OF RESEARCH AND DEVELOPMENT AGREEMENT
WITH LAWRENCE LIVERMORE NATIONAL LABORATORY FOR 21ST
CENTURY ENERGY SYSTEMS

**JOINT APPLICATION OF PACIFIC GAS AND ELECTRIC
COMPANY (PG&E) SAN DIEGO GAS & ELECTRIC
COMPANY (SDG&E) AND SOUTHERN CALIFORNIA
EDISON COMPANY (SCE) TO RECOVER COSTS OF AN
AGREEMENT WITH LAWRENCE LIVERMORE NATIONAL
LABORATORY FOR 21ST CENTURY ENERGY SYSTEMS**

Application 11-07-008

APPLICATION OF PACIFIC GAS AND ELECTRIC COMPANY (U 39 M),
SAN DIEGO GAS & ELECTRIC COMPANY (U 902 E),
AND SOUTHERN CALIFORNIA EDISON COMPANY (U 338 E)
FOR AUTHORITY TO INCREASE ELECTRIC RATES AND CHARGES
TO RECOVER COSTS OF RESEARCH AND DEVELOPMENT AGREEMENT
WITH LAWRENCE LIVERMORE NATIONAL LABORATORY FOR 21ST
CENTURY ENERGY SYSTEMS

**AMENDMENT TO APPLICATION OF PACIFIC GAS AND
ELECTRIC COMPANY (PG&E) SAN DIEGO GAS &
ELECTRIC COMPANY (SDG&E) AND SOUTHERN
CALIFORNIA EDISON COMPANY (SCE)**

Dated: October 19, 2011

Application: 11-07-008

Date: October 19, 2011

Witnesses: Various

**JOINT APPLICATION OF
PACIFIC GAS AND ELECTRIC COMPANY,
SAN DIEGO GAS & ELECTRIC COMPANY, AND
SOUTHERN CALIFORNIA EDISON COMPANY
TO RECOVER COSTS OF AN AGREEMENT WITH
LAWRENCE LIVERMORE NATIONAL LABORATORY
FOR 21ST CENTURY ENERGY SYSTEMS**

JOINT IOU PREPARED TESTIMONY

Application: 11-07-008

Date: January 31, 2012

Witnesses: Brian K. Cherry

**JOINT APPLICATION OF
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SUPPLEMENTAL TESTIMONY

Application: 11-07-008

Date: March 19, 2012

Witnesses: Various

**JOINT APPLICATION OF
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REBUTTAL TESTIMONY