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Siemens black-start technology to provide critical back-up for San Francisco's power grid

- **300 megawatts of emergency power can now be provided to San Francisco via the Trans Bay Cable system to restore power following a network event**

Siemens announced this week at the IEEE T&D Conference in Denver that it has installed an upgraded control system for the Trans Bay Cable (TBC) project, a high-voltage direct current (HVDC) transmission system with voltage-sourced converter (VSC) technology realized in a modular multi-level converter (MMC) topology. The project includes a 53-mile HVDC cable that runs under the San Francisco Bay. The upgraded system will enable Trans Bay Cable, via their Pittsburg converter station, to restore electricity to the San Francisco peninsula after a severe network event and is the first project of its kind in the U.S.

This feature, known as black-start capability, will allow up to 300 megawatts (MW) of power to be directly fed into the city through Trans Bay Cable, while the remaining network is being restored. The black-start capability, which does not require the San Francisco local network to be up and running, will provide electricity across the city to power critical infrastructure like hospitals, fire stations, and emergency centers.

"On any given day, TBC can provide about half of San Francisco's power needs, so our ability to provide reliable, consistent electricity is extremely important," said Steven Powell, Trans Bay Cable. "We're happy to have Siemens as a technology partner in this project and with their black-start technology, an upgrade to the system that was completed on-schedule and on-budget, which enables TBC to continue to deliver critical power during an emergency."

"The city of San Francisco and its residents depend heavily on reliable power. That

becomes even more of a priority during times of emergency, such as an earthquake or other catastrophic event, when providing power to critical systems is paramount,” said Mirko Düsel, CEO Transmission Solutions at Siemens Energy Management. “By routing emergency power directly into the city using Siemens’ technology, Trans Bay Cable’s new black-start capability will be able to use existing infrastructure to provide emergency power during a challenging time.”

Siemens’ modular multi-level (MMC) converter is the world’s first to be successfully tested for black-start capability using load banks. The new functionality is an extension of the company’s existing partnership with Trans Bay Cable, which currently utilizes Siemens’ HVDC converter station systems to transmit power via submarine cable which traverses the San Francisco Bay from a converter in the East Bay to the Potrero converter station in the heart of San Francisco. The submarine cable system has helped relieve congestion and provides transmission reliability for the Bay Area, while obviating the need to site and build additional generation in a dense population center.

The commissioning and testing of the upgraded project control system included highly-specialized load banks from ComRent and installation by Cupertino Electric, Inc.

This press release and a press picture is available at

www.siemens.com/press/PR2018040157EMEN

For further information on Division Energy Management, please see

www.siemens.com/energy-management

For further information on HVDC, please see

<https://www.energy.siemens.com/hq/en/power-transmission/hvdc/>

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