

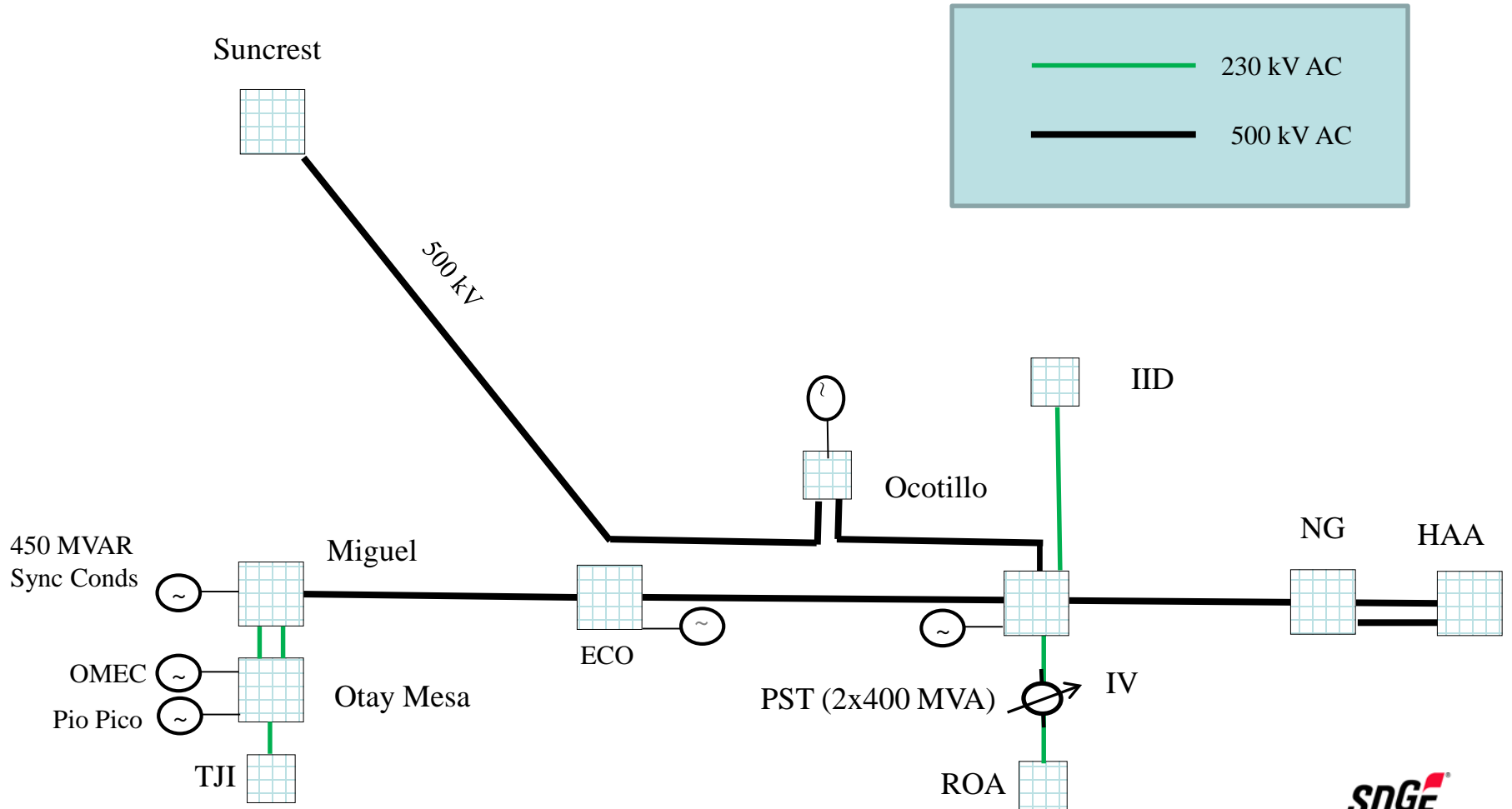


A  Sempra Energy<sup>®</sup> utility

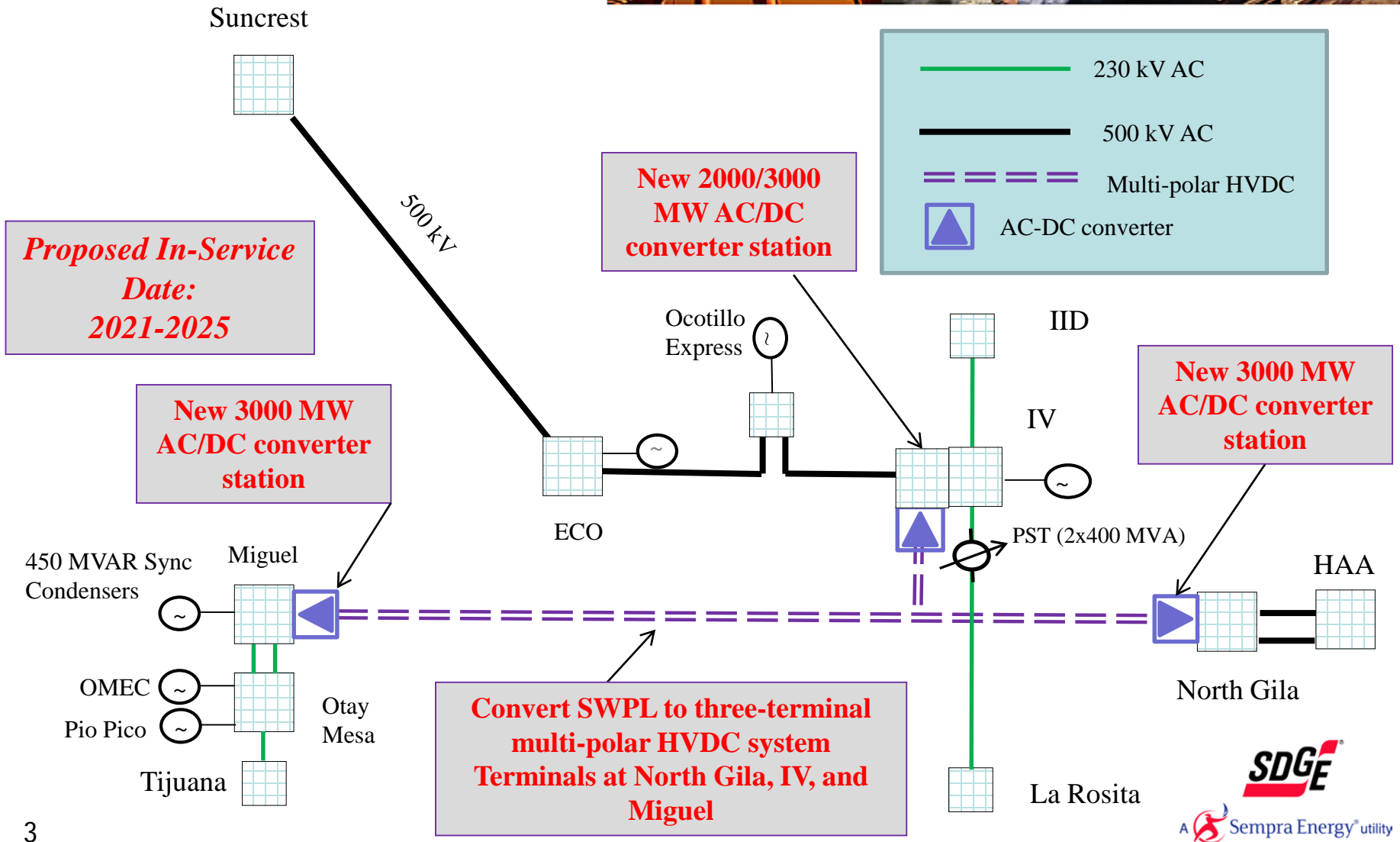


# Renewable Energy Express HVDC Conversion Project

# SDG&E's Existing System



# Proposed HVDC Conversion



# Scope



- Convert a portion of the 500 kV Southwest Powerlink (SWPL) to a three-terminal HVDC system with two fully independent poles.
- Install terminals at or adjacent to North Gila, Imperial Valley, and Miguel Substations.
- Each pole will be capable of fully independent operation at its maximum rated capacity.
- The planned capacity of the proposed HVDC system is 2x1500 MW, bi-directional, for a total transfer capacity of 3000 MW.
- Replace existing loop-in of SWPL at ECO with Sunrise to replace AC connectivity.
- The estimated cost is \$900 million - \$1 billion.
- The estimated ISD is 2026

# Benefits



- Mitigate East of Miguel congestion and congestion on the two Miguel 500/230 kV transformers.
- Increase San Diego import capability by 500-1000 MW or more by mitigating the worst limiting N-1-1 contingency (Sunrise and SWPL). This will reduce local generation need for Southern California by approximately the same amount.
- Reduce Greater IV/San Diego area LCR by mitigating the worst limiting contingency (the G-1/N-1 combination of TDM generation and IV-NG 500 kV).
- Reduce San Diego sub-area LCR by mitigating the worst limiting contingency (the N-1-1 combination of ECO-Miguel and Ocotillo Express-Suncrest).

# Benefits



- Improve operational flexibility of the IV PSTs, reduce the need to operate the PSTs at the extreme limits of their capability.
- Coordinate HVDC flow scheduling with PSTs to balance loading on IID's S-Line and CFE's La Rosita-Tijuana 230 kV system.
- Increase the ability to deliver both in- and out-of-state renewable resources (wind, solar, and geothermal) into the Southern California load centers, to reduce GHG emissions and meet the 50% RPS goal as required by Senate Bill 350 (SB350).

# Benefits



- Reduce dependence on gas-fired generation (both in-basin and imported) and reduce the impact of a potential gas curtailment in San Diego specifically or in the greater Southern California region generally
- Reduce LCR and mitigate voltage stability issues in SCE by mitigating the worst limiting N-1-1 contingency (Sunrise and SWPL)
- Reduce or eliminate reliance on the “Safety Net” load-shedding scheme.
- Increase West of River (WOR) and East of River (EOR) path ratings

# Synergies



- Possible synergies with other renewable pipeline projects:
  - SunZia - Completes a renewables expressway from NM into SoCal
  - Transwest
  - Centennial
- Possible synergies with other transmission projects
  - Synchronous condensers
  - ML-BB#2
  - IV-NG#2
  - ML 500/230 kV bank addition