UC MERCED
PATHWAY TO 100%
RENEWABLE ELECTRICITY GENERATION

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SNAPSHOT

- **Campus**
  - Demographics
  - Expansion

- **Sustainability Goals**
  - Zero Net Energy
  - Zero Net Greenhouse Gas Emissions

- **Pathway to Renewable Energy Generation**
  - Sustainability Strategic Plan (SWOT Analysis)
  - Existing one-megawatt system
  - Sustainability Strategic Plan
  - Power Purchase Agreement
  - North Bowl & Half Dome Systems & Storage System

- **Impact**
Demographics

- Three schools include:
  - School of Engineering
  - School of Natural Sciences
  - School of Humanities and Arts

  - Students: 8,821
  - Faculty & Staff: 1,531
Expansion

- UC Merced is expanding its existing campus by 1.2 million gross square feet to accommodate an enrollment size of 10,000 students.
- The “2020 Project” will deliver 13 buildings to include teaching & research facilities, housing, athletics, and student life space.
  - Three buildings came online 2018
    - Two (2) Housing Buildings & (1) Dining Facility

- Zero Net Energy
  - Reach renewable net energy through efficiency & renewable energy production

- Zero Net Greenhouse Gas Emissions
  - Achieve carbon neutrality for 2020 emissions
Pathway to Renewable Energy Generation

SWOT Analysis
- Assessed campus progress toward sustainability goals through a Strengths, Weaknesses, Opportunities, Threats (SWOT) analysis
- Finding: Our campus did not have a significant amount of renewable energy generation on-site

T-20 Solar
- One-megawatt ground mounted solar array system installed 2009
- Forty-five hundred panels – 4,500 panels
- 2.3 million kWh annual production
Leverage the development of our campus sustainability strategic plan to highlight the need to increase onsite renewable energy generation to support campus goals.

- Renewable energy generation was included as an action necessary to achieve our campus sustainability goals.
- The growth of our campus was an opportunity to build buy-in for solar installation.
Programmatic & Educational Initiatives

- **LEED Lab Course**
  - Multidisciplinary course that spans over two semesters where students work on the certification of buildings under LEED Existing Buildings: Operations & Maintenance (LEED EBOM)

- **Green Labs Program**
  - Reduces environmental impacts of laboratory buildings. Laboratories are the largest consumers of energy/waste at universities.

- **Green Offices Program**
  - Informs departments of practices that can be integrated into work-spaces to increase environmental stewardship of sites.

- **EcoRep Program**
  - Student Peer to peer educator program designed to foster a culture of sustainability education and literacy that directly impacts social and environmental changes on campus.
Power Purchase Agreement

- RFP, we entered into a PPA with SunPower for installation of a solar system (one contract two sites on campus):
  - One system located North Bowl of our campus
  - Second system located on housing unit Half Dome
  - Inclusive of an Energy Storage System onsite
North Bowl

- **5.1 MW system-size**
  - Includes 11,350 panels
  - 258,557 sq. ft.
- **Dual Purpose**
  - Solar Energy Generation System
  - Carport infrastructure that provides shade for two of the campus parking lots.
North Bowl
Half Dome

- Half Dome
  - 198.8 kW system-size
  - Includes 608 panels
  - 10,676 sq. ft.
Half Dome
Energy Storage

- Half Dome
  - 483 kW system-size
Quantitative Impact

Solar Production

- December 2018- June 2019
  - 4.4 million kWh
  - Avoided 6,687,810 lbco2e
  - Average monthly production 628,471 kWh month
  - June generation 900,000 kWh
  - $5,296 saving from demand charges

Expected Savings PPA (25 Yr)

- $13,646,710 million dollar's
- Avoid 146,776 metric tonnes of co2e
- Energy storage $5,296 demand charge savings
Questions?