

NREL's Campus of the Future

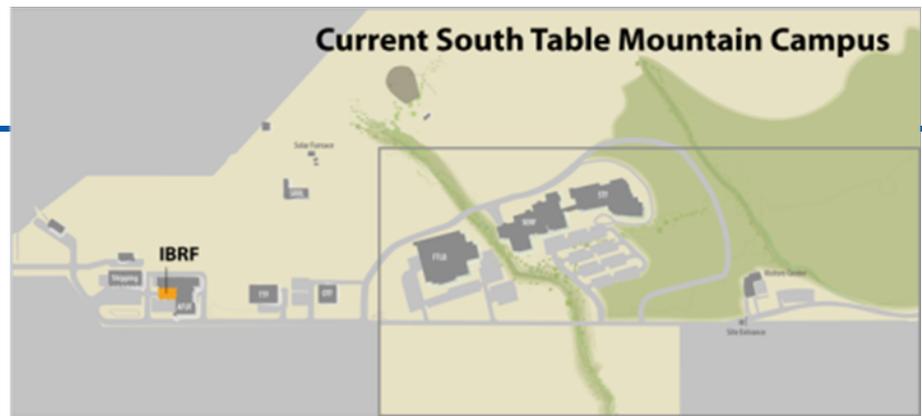
- The leading efficiency and renewables research center in the world
- Designed to meet the nation's crucial research objectives for clean energy technologies
- Creating a sustainable energy future for not only our nation but the world



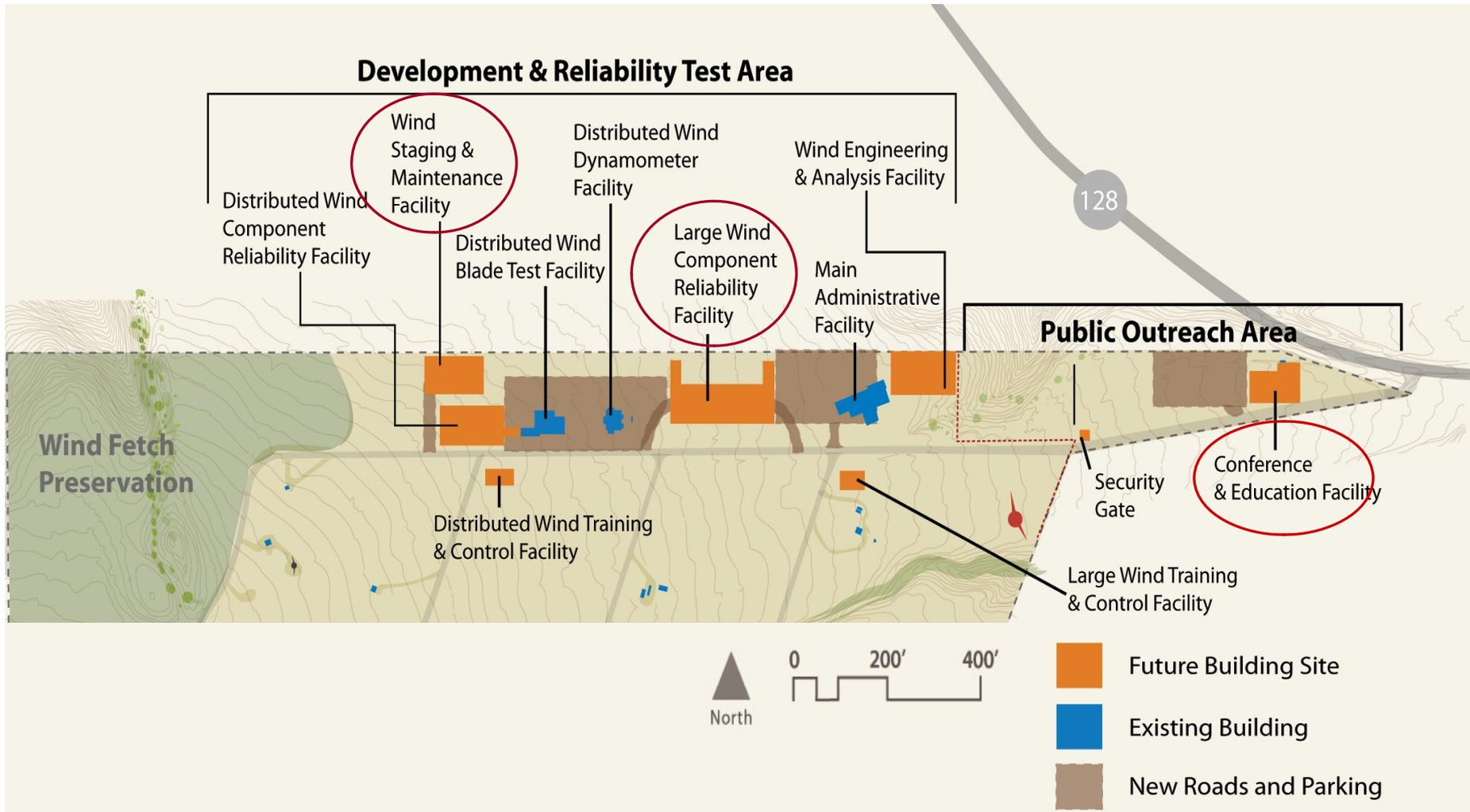
Campus of the Future Attributes

- **Safe, secure and sustainable**
- **Iconic facilities**
- **LEED Platinum/Gold certified facilities**
- **Carbon neutral**
- **Net zero energy**
- **Living Laboratory**

South Table Mountain Buildout Plan



National Wind Energy Center (NWECC) Build Out Plan



Renewable Fuel Heating Plant (RFHP)

- **Uses wood-fired (biomass) combustion boiler to combust forest thinnings**
- **RFHP will offset 75-80% of NREL's current campus natural gas use (generate approx. 6,000 mbh)**
- **Funded under an Energy Savings Performance Contract (ESPC)**
 - **The ESCO designs and installs the project at its own expense**
 - **ESCO is paid back out of utility savings generated by the project over the 24 year term of the project**
 - **ESCO financed \$3.557 million**
- **Scheduled to be in service this heating season**

Existing/Future Onsite PV



750kW PV

118kW PV

786kW PV on rooftop

AFUF	Alternative Fuel User Facility
ESIF	Energy Systems Integration Facility
FTLB	Field Test Laboratory Building
IBRF	Integrated Biorefinery Research Facility
NGBRF	Next Generation Biorefinery Facility
OTF	Outdoor Testing Facility
RFHP	Renewable Fuels Heating Plant
RFVSF	Renewable Fuels and Vehicle Systems Facility
RSF	Research Support Facility
S&TF	Science & Technology Facility
SEB	Security Entrance Building
SERF	Solar Energy Research Facility
SRRL	Solar Radiation Research Laboratory
TSRF	Translational Science Research Facility
TTF	Thermal Test Facility

- Future Building Site
- Building in Progress
- Existing Building
- Solar Arrays



Research Support Facilities

- Model for sustainable, high-performance building design
- Incorporates concepts of safe design into the planning, design, construction and operation of the facility
- Meets the requirements of the workforce of today and tomorrow while maximizing the total number of occupants
- Provides the lowest attainable energy use per square foot
- Designated to achieve a LEED® (Leadership in Environmental and Energy Design) Platinum designation — the highest benchmark awarded by the U.S. Green Building Council
- Expected completion: Summer 2010

Research Support Facilities



Research Support Facilities



Facility Features

- 218,000 sq. feet building with 2 wings:
3 floors in south, 4 floors in north
- DOE-owned work space for up to 800 administrative staff currently in leased space
- Includes a Library, Fitness Center and Commons Area

Research Support Facilities



Energy Features

- Daylighting
 - dramatically reduces energy use to approximately half the average energy used in a building this size to 25kBTU per square foot annually
 - Reduces energy use to one tenth of average government building
- PV Roof - Power Purchase Agreement
- Natural ventilation
- Next generation, energy-efficient data center

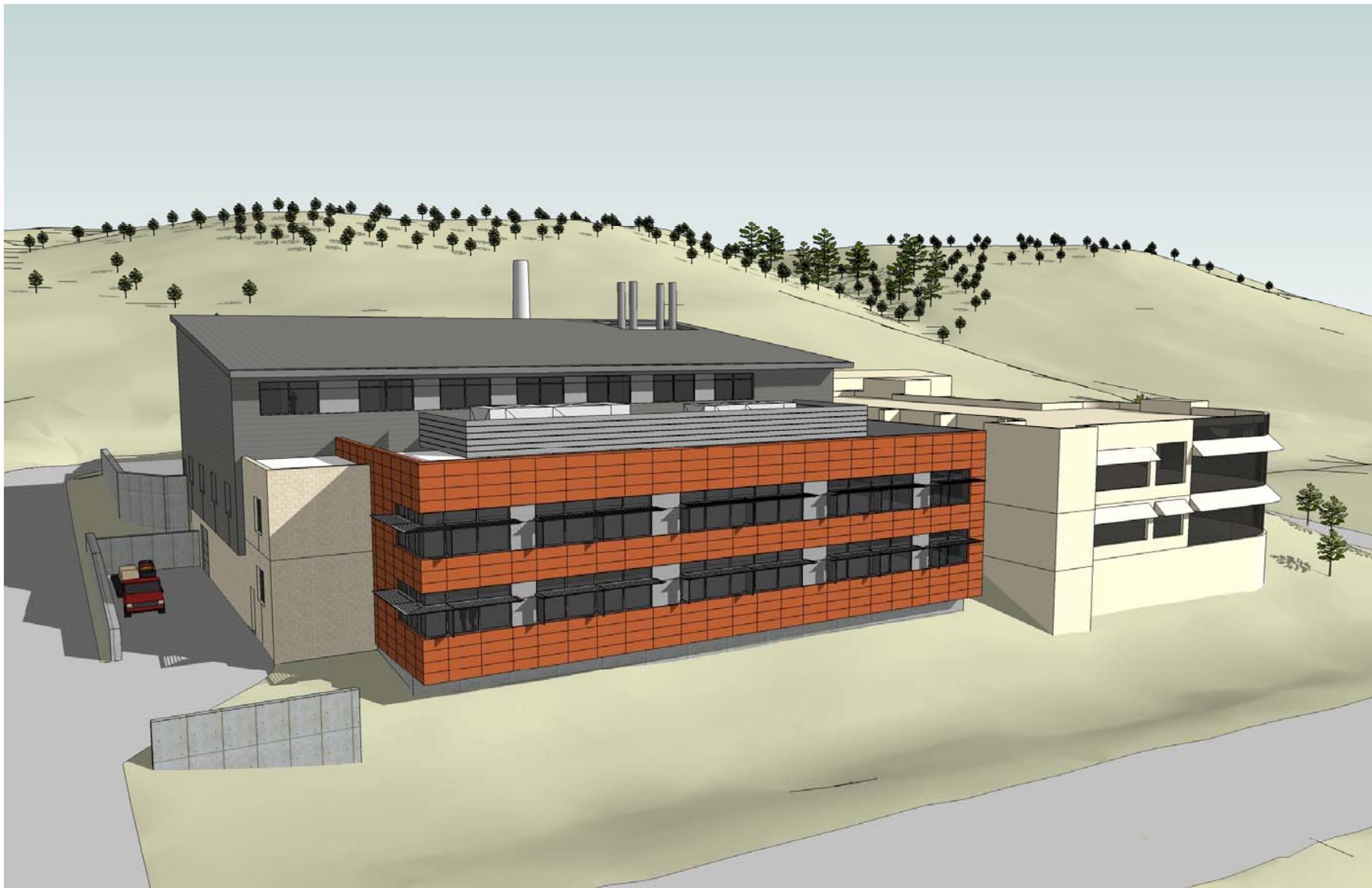
Integrated Biorefinery Research Facility (IBRF)

- State of the art R&D facility providing flexibility, fostering industry partnerships and allowing for future expansion
- Designed to support the Nation's ambitious "20 in 10" energy initiative:
 - Cost competitive cellulosic ethanol
 - Reduce US gasoline use by 20% in 2017
 - Ramp up the production of biofuels to 60 billion gallons
- Doubles size of existing Alternative Fuels Users Facility
 - 6,000 sq. ft. office space for approximately 35 staff
 - 2,000 sq. ft. of new laboratories
 - 4,000 sq. ft. of remodeled laboratories
 - 10,000+ sq. ft. of process demonstration (high bay)
- Expected completion: August 2010

Alternative Fuel Users Facility (AFUF)



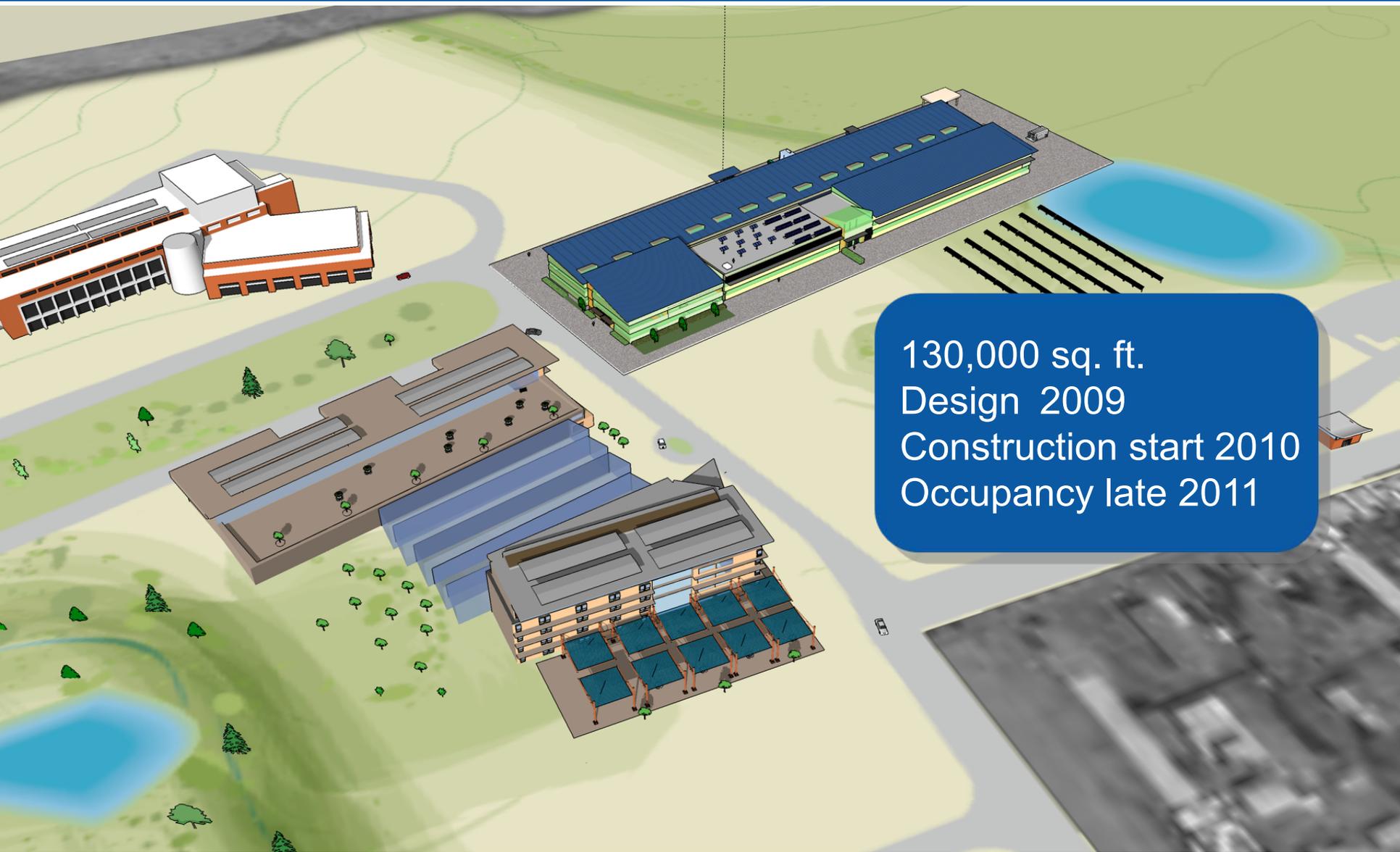
AFUF with IBRF Addition



Energy Systems Integration Facility (ESIF)

- Designed to house a variety of research that aims to overcome technical barriers to adding new renewable energy generation systems to the electrical grid
- 130,000 sq. ft. building located southeast of the existing Science & Technology Facility
- Multi-story building providing laboratory and office space for approximately 150 NREL researchers and support staff
- Designed to achieve a LEED® (Leadership in Environmental and Energy Design) Gold designation
- Employees could occupy the ESIF as early as 2012

Energy Systems Integration Facility

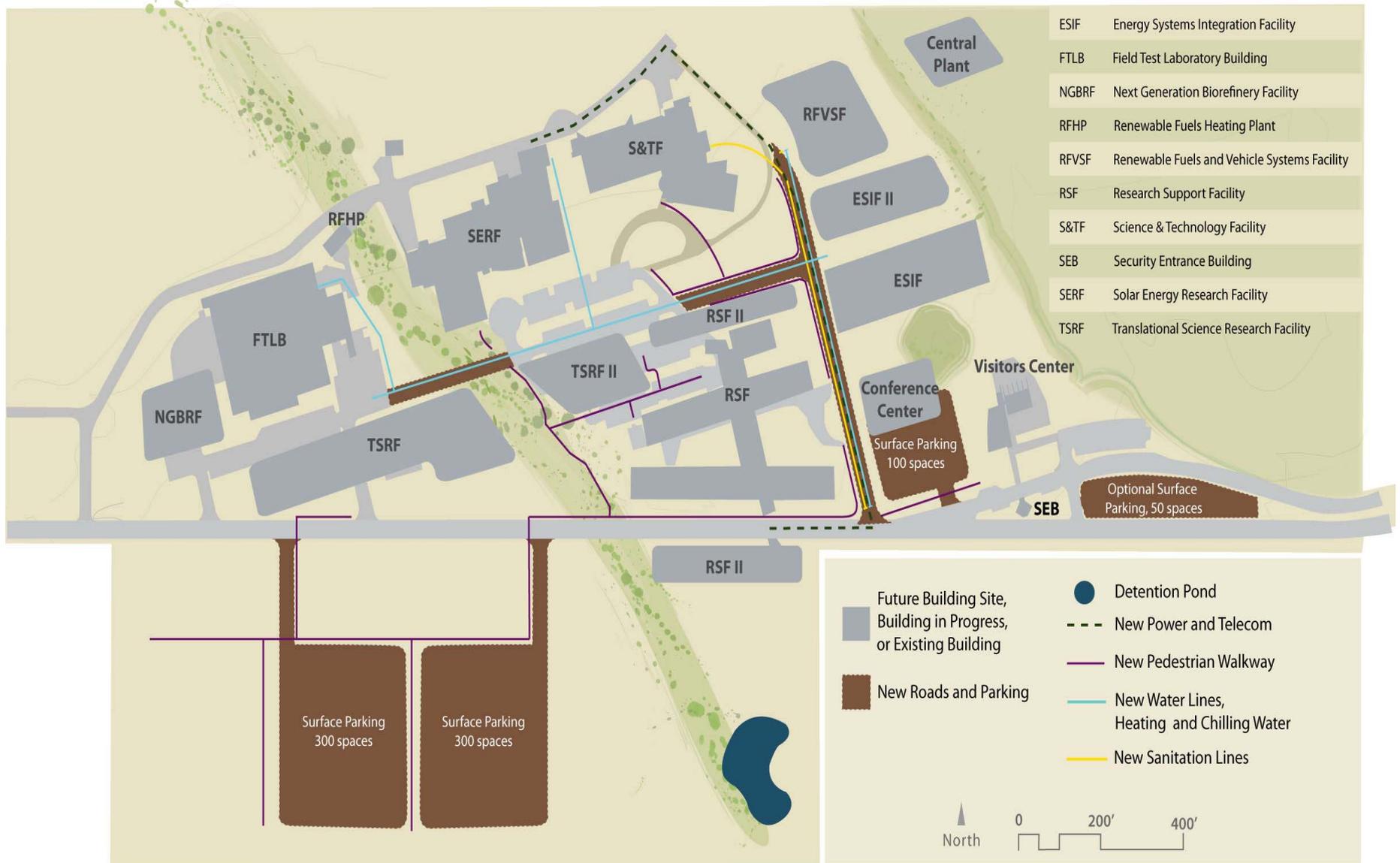


130,000 sq. ft.
Design 2009
Construction start 2010
Occupancy late 2011

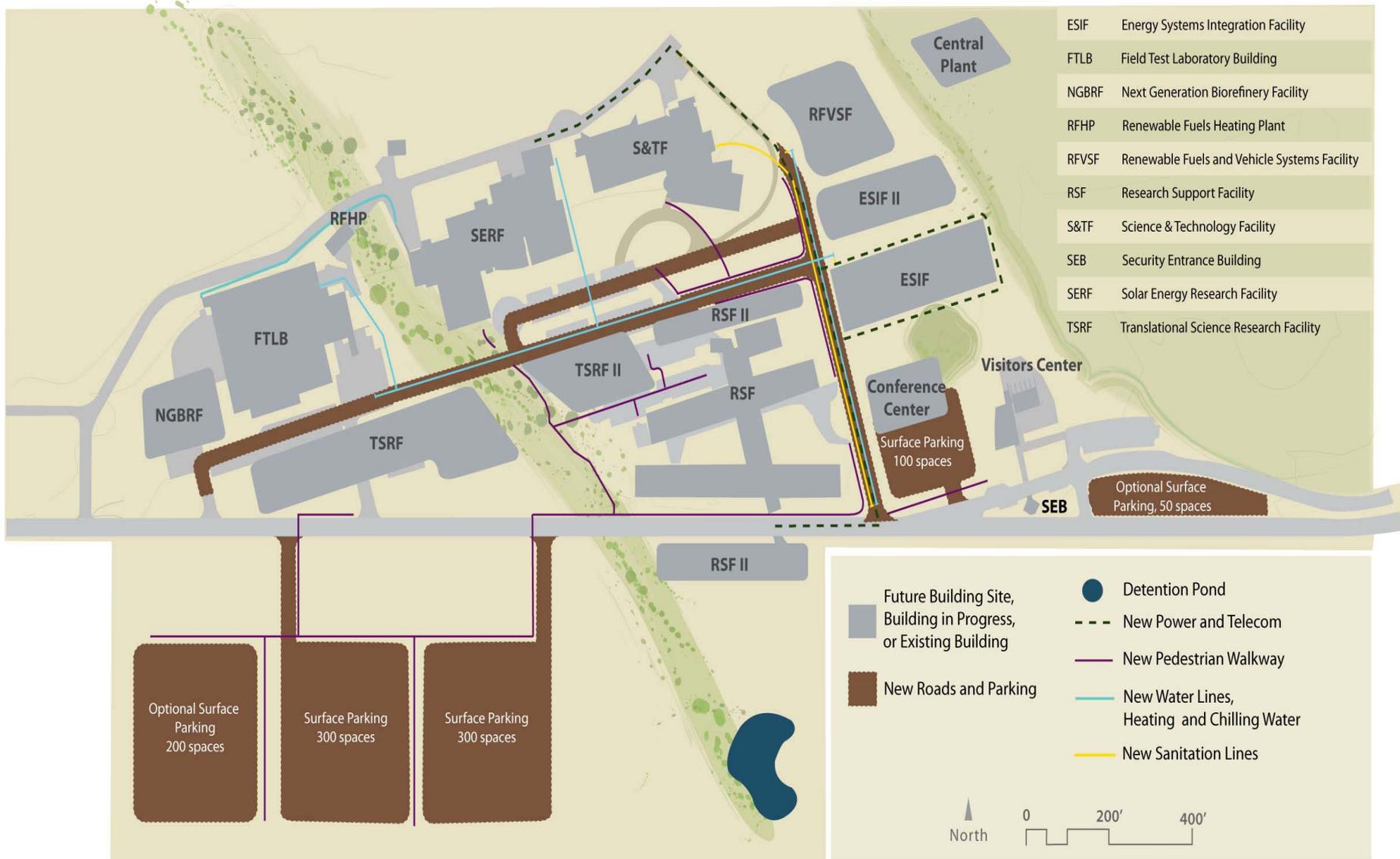
South Table Mountain Infrastructure Project

- **Provides the Infrastructure necessary to support the RSF and ESIF and the backbone for the Ten Year buildout**
 - **Utilities – Electrical, Telecomm/Data, Water, Sewer, and natural gas**
 - **Heating and Cooling water distribution system**
 - **Storm water system and campus landscaping**
 - **Roads, Parking Lots, walkways and bicycle paths**

STM Infrastructure Phase I



STM Infrastructure Phase II



Translational Science Research Facility (TSRF)

- Proposed for FY10 funding start (pending approval of Mission Needs Statement)
- Updates:
 - Includes BCRF and Solid-State Facilities
 - Increased occupancy from 150 to 210
 - Increased requirement for equipment
 - Size increased from 130,000 to 170,000 sq ft
- Provides:
 - Translational research capability
 - Bridges basic-to-applied R&D
 - Builds foundational capability
 - Accelerates discoveries-to-market capability

