

## 4.15 UTILITIES

This section describes the public utility systems needed to meet projected demand for the proposed campus at full development and examines the environmental effects of supplying the campus with potable water and water for fire protection, irrigation water, wastewater disposal, solid waste disposal, telecommunications, electricity, and natural gas.

Storm water drainage facilities are discussed in Section 4.8 Hydrology and Water Quality, of this EIR. As mentioned in Section 2, Description of the Project, the proposed site is currently largely undeveloped land with very limited existing utility service. Therefore, this section also examines the environmental impacts of constructing the infrastructure necessary to provide the proposed campus site with the utilities listed above.

Public comments received in response to the Notice of Preparation raised issues related to the impacts of increased demand on the existing wastewater treatment and disposal facilities; water supply, including water treatment; and energy supply, including utility lines and routes.

### 4.15.1 Summary of Site Selection EIR Impacts and Mitigation Measures

The SSEIR evaluated impacts from the provision of utilities to service the campus at the Lake Yosemite site, including impacts on water supply, wastewater treatment and conveyance facilities, solid waste facilities, and electric and natural gas demand.

All impacts identified in the SSEIR that are relevant to the proposed project are presented in the following table. For all impacts, the level of significance before and after application of mitigation measures identified in the SSEIR is also presented in the table. Although the location of the proposed campus is changed relative to the location evaluated in the SSEIR, all other attributes, especially campus population size, are largely unchanged. Therefore, the significance and the severity of impacts of the proposed campus previously analyzed in the SSEIR are unchanged.

SITE SELECTION EIR IMPACT	Level of Significance Prior to Mitigation	Level of Significance after/with Mitigation
Selection of a site, which could result in the development of a campus, would require the construction of a domestic water supply and water distribution system.	S	SU <sub>3</sub>
Selection of a site, which could result in development of a campus, would increase demand for domestic water supply due to the campus-related population living off campus.	S	SU <sub>3</sub>
Development of a campus, in conjunction with the buildout of the region, would generate additional demand for water.	S	SU <sub>3</sub>
Locating a campus at any of the sites would increase the generation of wastewater on the Campus site.	S	SU <sub>2</sub>
Locating a campus at any of the sites would increase the generation of wastewater in areas outside of the Campus site.	S	SU <sub>2</sub>
Development of a campus, in conjunction with cumulative development in the region, would require the construction of new wastewater conveyance and treatment facilities.	S	SU <sub>2</sub>

SITE SELECTION EIR IMPACT	Level of Significance Prior to Mitigation	Level of Significance after/with Mitigation
Locating a campus at one of the three finalist sites would result in the generation of solid waste by on-campus activities and population, potentially exceeding the capacity of local landfills.	S	SU <sub>1-2</sub>
Development of a campus at the site would result in the generation of solid waste by campus population living in areas outside of the campus and reducing the capacity of local landfills.	S	SU <sub>2</sub>
Development of a campus, in conjunction with cumulative development in the region around the site, would result in an increased generation of solid waste, which would exceed the existing and planned capacity of area landfills.	S	SU <sub>2</sub>
Development of a campus at any of the sites would increase the demand for and use of electricity and natural gas.	LS	N/A
Development of a campus at any of the sites would require development of major infrastructure, such as electrical transmission lines and natural gas distribution lines, in order to provide energy to the campus.	S	SU <sub>1</sub>
The development of a campus at any of the sites would require reliable and easily accessible advanced communication system facilities that would be able to accommodate the requirements of a modern 21 <sup>st</sup> -century campus environment.	LS	N/A
Development of a campus at any one of the three sites in conjunction with cumulative development in the metropolitan area surrounding the selected site, would increase the demand for and use of electricity and natural gas.	LS	N/A
Development of a campus at any one of the three final sites, in conjunction with cumulative development in the metropolitan area surrounding the selected site, would require development of major infrastructure, such as electrical transmission lines and natural gas distribution lines, in order to provide energy to the project.	S	SU <sub>2</sub>
Development of a campus at any one of the three sites, in conjunction with cumulative development in the metropolitan area surrounding the selected site would generate a demand for increased telecommunications connections in the Pacific Bell/Ponderosa Telephone service area.	LS	N/A
PS=Potentially Significant; S=Significant; LS=Less than Significant; B=Beneficial; NI=No Impact; N/A=Not Applicable; SU <sub>1</sub> = Impacts that cannot be mitigated, or for which it is not certain that mitigation could reduce the impact to a less-than-significant level; SU <sub>2</sub> = Impacts that could reduce the impact to less-than-significant levels, but require action by a jurisdiction other than the University; SU <sub>3</sub> = Impacts that, even with mitigation, cannot, or might not, be reduced to a less-than-significant level, and for which mitigation would not be under the University's jurisdiction.		

The SSEIR identified significant unavoidable impacts with respect to domestic water supply to the campus and off-campus population. It also found that the selection of a site and development of a campus would result in significant and unavoidable impacts with respect to wastewater, solid waste disposal, extension of electrical transmission and natural gas lines. The LRDP EIR finds these impacts to be less than significant based on additional information about the specific utility demands of the proposed campus and data from regional suppliers with respect to the provision of utilities to the campus.

Mitigation measures in the SSEIR include the following:

#### Water Supply

- **SSEIR Mitigation Measure 4.11-1**– *Prior to construction of facilities for a new campus, a firm water supply that is adequate to serve the campus at buildout shall be identified.*
- **SSEIR Mitigation Measure 4.11-2**– *Prior to the occupation of the first building, the University of California shall reach an agreement with the future water service district to provide a negotiated fair-share contribution to the provision of adequate water services to serve the campus, in accordance with the provisions of State law.*

#### Wastewater Conveyance and Treatment

- **SSEIR Mitigation Measure 4.12-1**– *The Long Range Development Plan shall address provisions for the collection, treatment, and disposal of campus wastewater in accordance with the environmental features and constraints of the site.*
- **SSEIR Mitigation Measure 4.12-2**– *Prior to the occupation of the first building, the University of California shall negotiate with the future wastewater service district in an effort to reach agreement on a capital facility fee for the provision of adequate wastewater services to the campus in accordance with the provisions of State law.*

#### Solid Waste Disposal

- **SSEIR Mitigation Measure 4.13-1**– *Consistent with the intent of AB 939, the Long Range Development Plan prepared for the new Campus site shall include a recycling plan as a formula for source reduction. This diversion plan shall be implemented in order to divert solid waste from the local waste stream.*

#### Electrical Utilities

- **SSEIR Mitigation Measure 4.14-1** – *During preparation of the LRDP, the University of California shall coordinate with PG&E to design and eventually implement adequate electrical and natural gas infrastructure to meet the needs of the future campus.*
- **SSEIR Mitigation Measure 4.14-2** –*Prior to project construction, the University of California shall evaluate the environmental effects of development of utility infrastructure and implement mitigation identified as feasible.*

In compliance with SSEIR Mitigation Measure 4.11-1, the University will complete an agreement that includes a fair-share contribution with the City of Merced to obtain potable water from the City's water supply. This source is adequate to serve the campus through full development under the proposed LRDP. The University is also working on an agreement with the City for the conveyance and treatment of campus wastewater through the early phases of development, and has developed options for wastewater treatment through full campus development. This agreement will include a capital facility fee and is in compliance with SSEIR Mitigation Measures 4.12-1 and 4.12-2.

In compliance with SSEIR Mitigation Measure 4.13-1 and LRDP policy, the University will also implement a waste recycling plan in order to reduce the amount of solid waste disposed of at the regional landfill. The University has developed a plan to secure energy resources necessary for the full development of the campus that is in compliance with SSEIR Mitigation Measures

4.14-1 and 4.14-2. The provision of all utilities is discussed in further detail in the sections that follow.

## 4.15.2 Environmental Setting

### 4.15.2.1 Potable Water and Water for Fire Protection

Much of the potable water in Merced County is drawn from groundwater sources. Discussion of the size and status of the underground aquifer that provides this water is discussed in Section 4.8, Hydrology and Water Quality.

There are 25 irrigation and urban water districts that serve most of Merced County. These districts pump groundwater and divert water from the Merced River and out-of-county sources. The largest district is the Merced Irrigation District (MID), which diverts water from the Merced River for agricultural purposes. MID currently serves some of the area near the proposed campus site. The City of Merced provides potable water service within the city limits of Merced. In order to provide for future growth, the City of Merced and MID have entered into a cooperative water supply and management agreement.

Currently, there is a limited well and water distribution system on-site that serves the Merced Hills Golf Course. The proposed campus site is not within the service boundaries of MID or the City of Merced. However, the site is within the City's sphere of influence and the charter of the City of Merced allows the City to directly serve customers in and near the City of Merced (EIP 1994). The City has agreed to supply water to the proposed campus. The nearest pipes that connect to the City's water system are at Yosemite Avenue and McKee Road.

The City of Merced's water supply comes from groundwater drawn from 18 wells and 14 pumping stations (City of Merced, 1997). Each well is equipped with emergency power, pressurization systems and telemetry. Water treatment includes fluoridation and chlorination at each well site. The water supply system consists of a combined storage capacity of approximately 1.4 million gallons, held in four elevated storage tanks. The City monitors ground water contamination and provides cleanup of contamination upon detection.

The City of Merced's water use in 1990 was 16,500 acre-feet per year (AFY) (EIP, 1994). In 1995, demand for water was reduced to 15,000 AFY because of water conservation efforts (City of Merced and MID, 1995). Pumping capacity at that time was approximately 42,600 AFY (EIP, 1994).

As stated in the City of Merced General Plan, declining groundwater levels due to overdraft prompted the City and MID in 1995 to produce a Merced Water Supply Plan to evaluate future water needs. The Water Supply Plan estimates that the City of Merced would require 60,000 AFY by 2030, with an additional 24,000 AFY needed by the proposed University campus. According to this plan, total urban water demand for the cities of Merced, Atwater and Livingston, the University of California Merced, and the unincorporated areas surrounding the City of Merced would be 120,000 AFY. To meet this demand, 72 new wells would need to be drilled (City of Merced and MID, 1995). The Water Supply Plan is currently being updated. However, the City of Merced has stated that urban water needs estimates in the 1995 Water Supply Plan would remain unchanged (Stroud, 2001).

#### **4.15.2.2 Irrigation Water**

Approximately 365 acres of the 910 acres of the campus would be landscaped with materials that would need water for irrigation. Turf grass would cover 213 acres and other landscaping would cover 152 acres. Additional acreage would be landscaped with drought resistant landscaping that would not require irrigation.

The design guidelines for the proposed campus include use of drought-resistant landscaping and efficient irrigation designs. Many of the existing University of California campuses currently use drip irrigation or automated systems, which are water-efficient practices for irrigation. Additionally, a wastewater recycling facility may be developed on-site or nearby in the proposed University Community.

#### **4.15.2.3 Wastewater Treatment and Conveyance**

The campus population would produce wastewater that would require conveyance to and treatment at a wastewater treatment facility. The County does not operate a regional wastewater treatment plant or collection system. Special districts, cities and private septic systems provide wastewater treatment in Merced County. The City of Merced owns and operates a municipal wastewater treatment system and provides service to some unincorporated areas outside the city limits. This system consists of sewage transmission pipelines and a secondary wastewater treatment plant (WWTP) located approximately 3 miles south of the city. Campus wastewater will be treated at this plant. The proposed campus site is about 1 mile from the nearest connection to the wastewater mains. A sewer trunk would be constructed leading from the campus along Bellevue and G Streets to connect to the existing sewer trunk with the required conveyance capacity. The collection system near the proposed site is within the North Merced Assessment District and there are approximately two million gallons per day (mgd) of excess conveyance capacity available in this system in the near term.

The City of Merced WWTP has a design capacity of 10 mgd. The plant currently treats a flow of 7.7 mgd and is not allowed to treat more because of a cease and desist order issued by the RWQCB. The order was issued because the ammonia levels in the treated effluent from the WWTP exceeded toxicity standards. The WWTP has commenced improvements to address this and has upgraded the aeration system, which removes ammonia from the effluent. Other improvements are also being implemented, and are expected to be completed by spring 2002. The City is currently in the planning stages of petitioning the RWQCB to allow the plant capacity to be increased back up to 10 mgd and for the limitation of the order to be removed (Kernkamp, 2001).

According to the General Plan, the City will provide for treatment of 20 mgd of wastewater by increasing capacity of the plant so that it will be able to serve 150,000 residents plus new business and industry (City of Merced, 1997). Currently, there is land to expand by 10 mgd. About 5 acres of agricultural land would need to be purchased to expand the headworks. The City has also developed plans to expand the treatment plant by five to six mgd by 2005 and the balance as needed. The City's master planning effort also includes the possibility that future needs of new development in the north Merced area could be served by a new treatment plant located somewhere in North Merced. The plant expansion would occur regardless of development of the proposed campus (Stroud, 2001).

Since 1997 (when the City General Plan as prepared), the City has conducted additional evaluation of the projected needs for wastewater treatment capacity. According to this evaluation, based on the projected growth within the city SUDP and the Sphere of Influence (SOI) through 2005, the existing treatment capacity would be adequate because projected flows (including those from the campus) would be about 8.9 mgd. By 2010 with the growth in the SUDP about 9.6 mgd of wastewater flows would be generated, and if the flows from the SOI are added in (including the campus), the total flows would be 10.5 mgd. The City projects that by 2020, with the campus and the University Community added to the regional growth, the total flows would be 13.3 mgd and these would increase to 16.3 mgd by 2030 (City of Merced, 2001).

#### **4.15.2.4 Solid Waste Disposal**

The population at the campus would generate solid waste. Waste not defined as municipal solid waste, including hazardous and radioactive waste, is discussed in Section 4.7, Hazards and Hazardous Materials, of this EIR. The County of Merced Department of Public Works oversees solid waste transportation and disposal operations of Class III municipal solid waste in Merced County. There are two landfills in the county. Waste from the proposed campus would be sent to the Merced County Highway 59 Landfill, located at 6049 North Highway 59.

This landfill covers 174 acres and in 1998, there were 3,552,833 cubic yards of landfill capacity remaining to be filled. At the projected 4.3 percent growth rate, capacity would be reached in 2007. In February 2001, the landfill received approval for an expansion of 140 acres of disposal area, or 25,859,000 cubic yards. This extends the projected life of the landfill until 2035, assuming a 4.3 percent growth factor and until 2038, assuming a 3% growth factor after 2015. Site life estimates state that in 2025, 13,465,413 cubic yards of landfill capacity will be remaining at this landfill (EMCON/OWT, 2000).

Solid waste is collected by the City of Merced within the city limits, and by franchise hauling companies throughout the unincorporated areas of Merced County. The City and these companies also pick up some recyclable materials for a fee. The City picks up cardboard from businesses for a reduced fee. There is no sorting or recycling plant in Merced County, but some recyclable material is accepted at the landfills, which is then taken to a recycling plant in Turlock. The County is in the process of developing a proposal for mandatory yard debris collection.

California's Integrated Waste Management Act of 1989 (commonly referred to as AB 939) mandated a 25 percent reduction in solid waste in 1995 and a reduction of 50 percent by the year 2000. AB 939 requires that the 25 percent and 50 percent mandate be met through source reduction, recycling and composting. Each City and County is required to submit a plan (Source Reduction and Recycling Element) which describes how they will meet the waste reduction mandates. The University of California is exempt from this Act, but since the campus would be designed to be environmentally sustainable, it would include measures for reduction and recycling of solid waste.

#### **4.15.2.5 Telecommunications**

The development of the proposed campus would require reliable and easily accessible advanced communication system facilities that would be able to accommodate the requirements of a 21st-century campus environment.

As a public utility under the jurisdiction of the Public Utilities Act and regulated by the Public Utilities Commission, Pacific Bell is obligated to make telephone service available to customers within their service area. Pacific Bell currently provides telephone service to the campus area and there is an existing line to Merced Hills Golf Course clubhouse. Other telecommunication companies also have lines in the vicinity. At this time, it is not known which company would provide telecommunication services to the proposed campus.

#### **4.15.2.6**    *Electricity*

The campus site is part of the California Independent System Operator's Fresno local area. Currently, PG&E provides electricity to the City of Merced. It has not yet been determined which utility company would provide power to the campus; both PG&E and Merced Irrigation District (MID) are potential providers. The site is within PG&E's Wilson 115-kilovolt (kV) subarea. A 230-kV Belotta-Herndon line originates at the Wilson Substation south of Childs Avenue and terminates northwest of Bellevue Road and Highway 99. This is the closest line to the proposed site. MID power lines are located near Highway 99.

#### **4.15.2.7**    *Natural Gas*

Natural gas would be needed at the campus for heating and other purposes. PG&E currently supplies the County of Merced with natural gas. The main pipeline serving the City of Merced is an 8-inch-diameter transmission pipeline that parallels Highway 99 through Merced. There is also a 6-inch line near the proposed Campus site, along Yosemite Park Way. Additional distribution lines and hook-ups are generally constructed on an "as-needed" basis.

### **4.15.3**        **Impacts and Mitigation**

#### **4.15.3.1**    *Standards of Significance*

The following standards of significance are based on Appendices F and G of the CEQA Guidelines. For the purposes of this EIR, an impact to utilities and related infrastructure is considered significant if the proposed project would

- require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;
- result in a determination by the wastewater treatment provider which serves or may serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments;
- generate solid waste that requires an expansion of a landfill, the construction of which could cause significant environmental effects;
- fail to comply with applicable federal, state, and local statutes and regulations related to solid waste;

- require or result in the construction of new energy production and/or transmission facilities or expansion of existing facilities, the construction of which could cause significant environmental effects; or
- encourage activities resulting in the wasteful or inefficient use of energy.

***CEQA Checklist Items Not Analyzed in the Impact Discussion***

The following checklist items under Appendix G of the CEQA Guidelines, Utilities, are not discussed in the following impact analysis.

- Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.

*Storm water drainage facilities are discussed in Section 4.8, Hydrology, of this EIR.*

- Require water supplies that are in excess of existing entitlements and resources, resulting in the need for new or expanded entitlements.

*The issue of water supply to the proposed campus is discussed in Section 4.8, Hydrology, of this EIR.*

**4.15.3.2 Analytical Method**

***Potable Water and Water for Fire Protection***

As shown in Table 4.15-1, the proposed campus would require 2,310 acre-feet per year (afy) of potable water, including for residential and academic use and cooling purposes.

**Table 4.15-1  
Summary of Campus Indoor Water Demand**

Land Use	Quantity	Units	Unit Demand Gal/unit/day	Average Daily Water Demand Gal/day	Average Annual Water Demand Afy
Residential <sup>a</sup>	16,150	persons	70	1,130,500	1,270
Building <sup>b</sup>	18,038	persons	20	360,760	405
Research Facilities <sup>c</sup>					335
Cooling					300
<b>Total</b>	<b>34,188</b>				<b>2,310</b>

<sup>a</sup> Students, faculty, and their dependents who live on campus

<sup>b</sup> Excludes students, faculty, and their dependents who live on campus

<sup>c</sup> Assumed to be 20 percent of total indoor water demand

***Irrigation***

The proposed campus would require 1,130 afy of water for irrigation of turf grass and other landscaping, as shown in Table 4.15-2.

**Table 4.15-2  
Summary of Campus Outdoor Water Demand**

Use	Area, in acres	Annual Water Demand	
		acre-feet/acre	afy
Turf grass	213	4	850
Other landscaping	152	3	460
<b>Total</b>	<b>365</b>		<b>1,310</b>

Recycled water can be used for both irrigation and toilet flushing in nonresidential buildings. Table 4.15-3 summarizes potential recycled water demand.

**Table 4.15-3  
Summary of Potential Recycled Water Demand for the Campus**

Recycled Water Demands	Demand (afy)
Campus Irrigation	1,310
Campus Toilet Flushing <sup>a</sup>	557
<b>Total recycled water demand</b>	<b>1,867</b>

<sup>a</sup> Includes students, faculty and dependents who live on campus, and nonresident student and faculty use while on campus.

### *Wastewater*

Water use and wastewater flows are related. In general, wastewater is generated from indoor water uses, and thus, is impacted by water conservation efforts. The rate for the proposed project assumes that 90 percent of indoor water demand and 30 percent of cooling water demand would become wastewater. Based on projected water demand from Table 4.15-1, the proposed campus would generate 2,170 afy or 1.93 million of gallons per day (mgd) of wastewater, as shown in Table 4.15-4.

**Table 4.15-4  
Summary of Campus Wastewater Flows**

	Potable Water	Cooling Water
Water Demand	2,310 afy	300 afy
Wastewater Generated	90%	30%
Wastewater Generation	2,080 afy	90 afy
Total afy Wastewater	2,080 + 90 = 2,170 afy	
Total gpd <sup>a</sup> Wastewater	1,931,300	
Total mgd Wastewater	1.93	

<sup>a</sup> 1 Ac-ft/year (afy) = approximately 890 gallons per day (gpd)

***Solid Waste***

Based on the Integrated Waste Management Board's study of residential and business waste disposal rates, this EIR assumes 0.36 tons/year per capita for single-family housing unit and 0.46 tons/year per multi-family housing unit for the people living on campus; and 0.8 tons/year for each employee of the campus. As detailed in Section 2, Project Description, all students who live on campus are assumed to live in apartments, with single students living two or four students per apartment. Additionally, this EIR assumes that approximately 40 percent of the faculty living on campus would live in apartments and 60 percent would live in single-family homes. Table 4.15-5 shows that approximately 7,544 tons of solid waste would be generated by the proposed campus annually.

**Table 4.15-5  
Solid Waste Generation at Full Campus Development**

<b>Group</b>	<b>Population</b>	<b>Number of Units</b>	<b>Multi-Family rate<sup>1</sup></b>	<b>Single-Family rate<sup>1</sup></b>	<b>Educational services rate<sup>2</sup></b>	<b>Total waste to be disposed (tons/year)</b>
Student	12,500	4,418 <sup>3</sup>	0.46 tons/unit/yr			2,032
Faculty and dependents in multi-family units		284 <sup>4</sup>	0.46 tons/unit/yr			131
Faculty and dependents in single-family units <sup>5</sup>		1,065		0.36 tons/resident/yr		383
Employees <sup>6</sup>	6,248				0.8 tons/employee/year	4,998
<b>TOTAL</b>						<b>7,544 (4,904 cu yards/year)</b>

<sup>1</sup> From [www.ciwmb.ca.gov/wastechar/ResDisp.htm](http://www.ciwmb.ca.gov/wastechar/ResDisp.htm)

<sup>2</sup> From [www.ciwmb.ca.gov/wastechar/DispRate.htm](http://www.ciwmb.ca.gov/wastechar/DispRate.htm)

<sup>3</sup> Based on Table 2-3, Housing Distribution, which assumes 12,500 students and their dependents living on campus

<sup>4</sup> Assumes 284 multi-family units for faculty housing, per the Project Description

<sup>5</sup> Assumes 426 single-family units for faculty housing, per the Project Description. Assumes 2.5 people per household and one household per unit.

<sup>6</sup> From Table 2-1 UC Merced Projections of Students, Faculty, and Staff

***Telecommunications***

Telecommunications infrastructure appropriate to a modern research and teaching facility, including access to multimedia, data and image transmission services and technologies, would be needed.

***Electricity***

At full development, the campus would have an annual need for 18.3 megawatts (MW) of electricity, based on projected population and builtspace on campus. For purposes of analyzing

electricity utility impacts, this EIR conservatively assumes all electricity will be provided through the grid.

### *Natural Gas*

At full development, 1,020 therms/hour, or 8,935,200 therms/year, of natural gas would be needed for the proposed campus. This need is based on projected population and built space on campus.

#### **4.15.3.3 Project Impacts and Mitigation**

##### **4.15-1 Implementation of the LRDP would generate demand for potable water and require the construction of new water extraction and conveyance facilities. This is considered to be a *less-than-significant* impact.**

The proposed campus would generate demand for 2,310 afy of potable water at full development. This estimate takes into account standard water conservation practices and the use of recycled water for irrigation and other uses. In the event that no recycled water plant is constructed (either on or off campus), potable water would be used for landscape irrigation, and therefore the demand for potable water at full campus development could be 3,620 afy. Various types of water conservation methods are practiced at existing University of California campuses, and would be included in the campus design plans. These methods include water conservation awareness campaigns, installation of water-efficient bathroom fixtures, water-efficient practices for irrigation, and regular monitoring of water usage. Campus plans also include using reclaimed water from an on campus or nearby recycled water plant for irrigation and toilet flushing. The design of the proposed campus includes utility water conservation measures such as heavy mulching, landscaping with native, drought-resistant plants, and drip irrigation systems.

The City of Merced would provide potable water to the campus. Water wells would be constructed by the City on the campus site and a water distribution system would be developed and built on the site. The campus would be connected to the City's water distribution system via a 16-inch line that would be built along Lake Road and Yosemite Avenue. This connection would provide backup water if there is an interruption in the on-site supply. Water would also be needed for fire protection services, and water storage tanks would be built on campus to accommodate fire flow requirements.

The environmental impacts of well construction would depend on the resources present within the footprint of the well site. As explained in preceding sections, this EIR analyzes the full impacts of developing all 910 acres that make up the Main Campus site, where the water wells and associated facilities would be located. Therefore, the water wells would not result in any additional impacts that are not addressed in the other sections of this EIR.

Construction of the campus water distribution system would be clustered in a utility tunnel with other utilities such as electric cables. This tunnel would consolidate infrastructure and minimize subsurface disturbance.

The construction of the water line connection to the City's main distribution (for system reliability) would not result in impacts to environmental resources, because the line would be installed within the shoulders or pavement of Lake Road and Yosemite Avenue consistent with

the City's practice to install utilities within roadways. Therefore, the impact related to provision of potable water to the proposed campus is considered *less than significant*.

#### Mitigation Measures

*No mitigation required.*

#### **4.15-2 Implementation of the LRDP would generate wastewater flows that would require the construction of new conveyance and treatment facilities. This is considered to be a *less-than-significant* impact.**

The City has committed to provide wastewater treatment service to the campus (Smith, 2001) Wastewater flows from the initial phases of campus development would be conveyed to and treated at the City of Merced wastewater treatment plant (WWTP). The initial flows from the campus through 2008 would be 0.21 mgd. The treatment plant has a capacity of 10 mgd (to be restored by spring 2002) and currently treats about 7.7 mgd, and therefore there would be adequate capacity to serve the initial phases of the campus.

At full development, the campus would generate approximately 1.93 mgd of wastewater. This would be treated either at the City's existing wastewater treatment plant, or at a new recycled water plant, or at both facilities. Assuming that all the wastewater from the campus at full development were to be treated at the City's WWTP, and assuming that there were no increases in flows to the WWTP from other sources, the existing plant would be adequate to serve the full campus. However regional population would grow with and without the campus, therefore the City anticipates that it will have to expand the WWTP by another 10 mgd. The City notes that it would expand its treatment plant with or without the campus and views the Campus as another customer in its service area (Stroud, 2001). The City has developed plans to expand the facility by 5 or 6 mgd by 2005 and the rest as needed. With the planned expansion of the plant to 20 mgd, there would be adequate capacity to handle the flows from the campus and the projected growth within the City of Merced SUDP and SOI.

The construction of a wastewater line connection to the City's wastewater conveyance system would not result in impacts to environmental resources, because the line would be installed within the shoulder of Lake Road, Bellevue Road, and G Street, consistent with the City's practice of placing utility lines within roadway shoulders or under the pavement. The environmental impacts of all off-site improvements are discussed in other sections of this EIR. Therefore, the impact related to the provision of wastewater service to the proposed campus is considered *less than significant*.

#### Mitigation Measures

*No mitigation required.*

#### **4.15-3 Implementation of the LRDP would generate solid waste that would not require the expansion of the regional landfill. This is considered to be a *less-than-significant* impact.**

In order to fulfill the University's objectives of environmental stewardship, the University would develop a source reduction and recycling program. This would reduce the amount of solid waste that would go to the County landfill. Expansion of the landfill site is to start in 2008–2009. The

Highway 59 landfill capacity will be reached in approximately 2035. It assumes a growth factor of 4.3 percent until 2015 and 3 percent to closing, and accounts for campus development (EMCON/OWT, 2000).

As shown in Table 4.15-7, in 2025, over 14 million cubic yards of capacity will be available in the landfill, which would provide for 7,298,770 tons of solid waste. The proposed project would produce 4,904 cubic yards (7,544 tons) of solid waste annually. This is a small percentage of total waste accepted at Highway 59 landfill, which accepts 160,000 tons per year. Because adequate capacity will be available, this impact would be *less than significant*.

**Table 4.15-6  
Landfill Capacity**

Cubic Yards Remaining in 2025	Necessary Soil Coverage <sup>a</sup>	Net Available cubic yards	Weight-to-Volume Compactions Rate <sup>b</sup>	Tons
14,036,098 <sup>c</sup>	- 2,807,220 cy	11,228,878 cy	0.65 tons	7,298,770

<sup>a</sup> EMCON/OWT, 2000, states that for every four cubic yards of waste disposal, one cubic yard of soil must be added as cover.

<sup>b</sup> Refuse volume based on the compaction rate of 1,300 lbs/cubic yard, i.e. 0.65 tons per cubic yard.

<sup>c</sup> From Table 5A of EMCON/OWT Solid Waste Services, 2000.

#### Mitigation Measures

*No mitigation required.*

#### **4.15-4 Implementation of the LRDP would require the extension of communication facilities. This is considered to be a *less-than-significant* impact.**

Telecommunication companies would provide this service by extending their lines to the campus. These extensions would be located under existing roads leading to the campus. Duct banks would be installed within or adjacent to major roads on campus by the service provider. These duct banks would carry fiber optic lines to individual buildings. Because of their location under existing roadways, no environmental impacts are associated with off-site improvements. Impacts of on-site improvements are addressed in other sections of this EIR.

#### Mitigation Measures

*No mitigation required.*

#### **4.15-5 Implementation of the LRDP would generate a demand for electricity for the proposed campus which would require an extension of electric transmission lines. This is considered to be a *less-than-significant* impact.**

Electricity for the campus would initially be provided through one or more connections to the grid. For the first phase of the campus development, about 3.5 MW of electricity would be needed through 2007-08. Power will be provided through the grid, and this power source will be phased out as the primary power source by power from the existing on-site hydroelectric power plant and/or from an on-site natural gas-fired cogeneration power plant with supplemental power from the grid. For subsequent phases, the campus is exploring various options to provide the incremental electricity that would be needed using alternative technologies such as fuel cells and photovoltaic systems. At full development, the campus would need 18.3 MW of electricity annually.

All new buildings would incorporate standard energy conservation measures. The design of the proposed project would follow appropriate building design requirements, such as passive solar design, and utilize energy-efficient methods and appliances, such as solar hot water systems and low-flow showerheads.

While development of the proposed campus would increase the demand for energy, the University of California system has established policies to comply with and exceed state standards (Title 24) for energy conservation. One of the principles of the LRDP is sustainability and environmental stewardship. In general, new buildings on University of California campuses must meet the Uniform Building Code (UBC) requirements relating to glazing, weather sealing, choice of building materials, insulation and water and energy-conserving plumbing fixtures. The University of California has also implemented a policy requiring all campuses to conserve energy by 10 percent more than the standard set by Title 24, Energy Conservation Standards of the California Code of Regulations (CCR). The LRDP contains a sustainable design principle that the Merced Campus buildings would be designed to meet energy targets that represent a 20 percent improvement on existing energy codes overall.

Although the long term objective is for the campus to produce all or most of electricity it would need, the campus may rely largely on outside sources for power in the early years and for backup through the life of the LRDP. Due to a number of factors, energy providers have recently not been able to keep up with growing demand in California for electricity and natural gas. There is no evidence, despite the State's current uncertainty about a reliable supply of electricity and natural gas, that the limited amount of electricity that may be purchased by the campus from the grid would result in the need for new electric and/or natural gas generating facility, such as a power plant. Because electricity and natural gas can be transmitted for long distances, it can be obtained from a wide range of sources, both in and out of California. As a result of this characteristic, it would be speculative to assume development of the campus would generate the need for a new electric generating facility, or where new facilities would be located, or to evaluate environmental impacts resulting from the construction and operation of new facilities in California. In addition, an environmental document that analyzes and discloses environmental impacts from the construction and operation of any new power plants and imposes mitigation measures as conditions of project approval to address significant impacts would be prepared before new power plants are approved.

Section 2 of Volume 2 shows the power line extensions that would be required to serve the campus in the initial phase of development, and at full development under the LRDP. For the first phase, these connections would involve the use or reconducting of existing electricity distribution lines along Bellevue and Lake Roads. For the full campus a new line may be necessary which would be aligned along the proposed Campus Parkway. Reconducting of existing distribution lines would not result in any environmental impacts. Construction of a new power distribution line along Campus Parkway could result in impacts to agricultural lands, biological resources, or other resources that may exist in the Campus Parkway right-of-way. Environmental (footprint) impacts from the construction of the Campus Parkway are discussed in other sections of this EIR, in the discussion of cumulative impacts. Environmental (footprint) impacts from a power line or other utilities that may be located along Campus Parkway are therefore also addressed in the discussion of cumulative impacts under the relevant resource areas. The environmental impacts from power use and power line extensions are therefore considered to be *less than significant*.

Mitigation Measures

*No mitigation required.*

**4.15-6 Implementation of the LRDP would generate a demand for natural gas that would require an extension of the natural gas pipelines. This is considered a less-than-significant impact.**

At full development, the proposed campus would need 1,020 therms/hour of natural gas. A regulator station would be required to step down gas pressure from transmission level to distribution level pressure. This station would be located near the campus entrance on Lake Road, on campus property. A transmission pipeline would also need to be built to connect the campus to the existing PG&E lines. For the first phase of the campus, PG&E would place the distribution line along existing roadways leading to the campus site. Should additional connections be needed as the demand for gas on campus increases overtime, PG&E would put a gas line along the Campus Parkway. Environmental effects from the construction of off-site utilities are discussed in the other sections of the EIR, and have been determined to be *less than significant*.

Mitigation Measures

*No mitigation required.*

#### 4.15.3.4 Cumulative Impacts

**4.15-7 Implementation of the LRDP together with other cumulative development will generate demand for wastewater treatment. This is considered a less-than-significant cumulative impact.**

**Campus, University Community, and Campus Parkway.** At full development, the Campus would generate 1.93 million gallons of wastewater per day. This quantity of wastewater would be treated at the City of Merced's wastewater treatment plant until a recycling plant is built.

The University Community at buildout would generate 1.69 million gallons of wastewater per day. The County has proposed a combination of options for treatment and disposal of wastewater generated within the University Community, including a decentralized wastewater management system, a seasonal water recycling system, conveyance to the City of Merced wastewater treatment plant, and conveyance to the wastewater treatment plant in Atwater. The County anticipates that a hybrid system would be constructed on the University Community site that would allow for onsite treatment of a portion of the flows and reuse of another portion of the wastewater flows for landscape irrigation. However, in the event a hybrid system is not implemented, then the maximum flows at buildout that would be conveyed for treatment would be 1.69 mgd. If the University Community does not utilize the City's WWTP, there would be no cumulative impact from the Campus and Community combined.

In the event that this flow is treated at the City's WWTP, the campus and the University Community together would discharge 3.62 mgd to the WWTP. This could be accommodated with the planned expansion to 20 mgd. Because capacity would be available, the combined impact would be *less than significant*.

**Other Cumulative Development.** The City of Merced has estimated that expansion of the capacity of the Merced wastewater treatment plant to 20 mgd will be sufficient to serve the treatment needs of the campus and community as well as an increase in the City's population within its SDUP and SOI, which is expected to occur through the year 2030, as well as commensurate growth in new business and industry. The campus, University Community and other cumulative development within the City of Merced SUDP and SOI would require the expansion of the WWTP incrementally over time. Such an expansion can be accommodated without adversely affecting sensitive resources. Accordingly, the cumulative impact is *less-than-significant*.

**4.15-8 Implementation of the LRDP together with other cumulative development would increase in solid waste generation. This is a *less-than-significant* impact.**

**Campus, University Community, and Campus Parkway.** At full development, the Campus will generate approximately 4,904 cubic yards (7,544 tons) of solid waste per year and the University Community is estimated to generate about 5,852 to 6,502 cubic yards (from 9,000 tons to 10,000 tons, depending on diversion percentage) of solid waste per year that will be disposed of in a regional landfill.

The existing permitted capacity of the Highway 59 landfill is approximately 30 million cubic yards. Currently, the landfill is receiving approximately 221,190 cubic yards per year. The landfill's capacity will extend through approximately 2035, depending on the growth factor. The population growth attributable to the LRDP and a campus community was considered in these projections as well as other expected growth in the region during this period.

**Other Cumulative Development.** As noted above, growth in the region served by the Highway 59 landfill is included in the projections that the landfill's capacity will extend through approximately 2035. In accordance with the provisions of state law, the County must have a plan in place 15 years before the landfill closes to ensure that adequate landfill capacity will be available to meet future solid waste disposal needs. Such a plan could include a wide variety of options including increased use of recycling and other waste reduction strategies, use of transfer stations to transport waste to other landfills, opening a new site, and various mechanisms to enhance the capacity of existing landfill sites. The environmental impacts of the options the County might elect to pursue when it develops revisions to its solid waste management plan are too speculative to evaluate in this EIR.

**4.15-9 Implementation of the LRDP together with other cumulative development would generate demand for electricity and natural gas. This is considered to be a *less-than-significant* impact.**

**Campus, University Community, and Campus Parkway.** Electricity and natural gas can be transmitted over long distances, and supply is usually made available from varying and numerous sources. The campus at full development would require 18.3 MW of electricity and 1,020 therms/hour of natural gas. The demand for electricity for the University Community at buildout is estimated at 48.16 MW and for natural gas at 3,478 therms/hour. The cumulative demand would therefore be about 66.5 MW of electricity and about 4,498 therms/hour of natural gas.

The cumulative demand for electrical power and gas to supply the campus and the University Community would not be sufficient, standing alone, to trigger the need for a new electric generating facility or gas supply facility by electrical or gas service providers. Accordingly, cumulative impacts of the campus and University Community taken together relating to power and gas supply would be *less than significant*.

**Other Cumulative Development.** While the cumulative demand for electrical power and gas to supply the Campus and the University Community would not be sufficient, standing alone, to trigger the need for new electrical and gas production facilities, when the demand they would create is considered together with the demand from other cumulative projects, the cumulative demand would do so. The additional demand for electricity and natural gas associated with full development of the Campus and the University Community would cumulate with demands from Eastern Merced County as well as all other regions that tap into the same electricity and natural gas sources. Sources of electricity are diverse and widespread. The primary electricity-generating sources for the western states are hydroelectric, nuclear, coal, natural gas, and renewable sources. The western states of the United States are joined with Canada in an extensive network to share the electrical energy produced from these sources. Also, more electricity generating plants are expected to become operational between now and the time this project is commenced. Natural gas is supplied to California from Canada, the Rockies, and the southwest. With respect to electrical power, there is no evidence that demand from the Campus and University Community would make any significant contribution to the need for specific new facilities. The construction of new power plants that have been approved or that are in the process of being approved is expected to eliminate the rolling blackouts that make the current cumulative situation unacceptable. In addition, it is not possible to predict where new facilities would be located, or to evaluate environmental impacts resulting from the construction and operation of the new facilities in California. However, the California Energy Commission conducts a complete environmental review of proposed power plant projects of 50 MW and larger before approving them and requires as a matter of practice that all significant environmental impacts be mitigated to a less than significant level. Smaller projects must also go through environmental review. Accordingly, this cumulative impact is considered to be *less than significant*.

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