Department of Sustainability & Energy Management (SEM)
About SEM

SEM leads the initiative to advance sustainability in campus operations and is directly responsible for the campus programs with the largest environmental impacts. This mission is accomplished with strategic assistance from the Office of Sustainability and the support of LBRE Finance & Administration. Key programs include:

- Parking & Transportation
- Water & Civil Services
- Energy Services
The Stanford Ecosystem

Resources Used
- LAND
- ENERGY
- MATERIALS
- WATER

Environmental Impacts
- TRAFFIC
- AIR EMISSIONS
- SOLID WASTE
- WASTEWATER

Sustainability: Meeting the needs of today without compromising the ability to meet the needs of the future
SEM mission is to help guide Stanford to sustainability
Sustainability and Energy Management (SEM)

Katie Talamantez, Finance & Administration
Joe Stagner, Executive Director
Elsa Baez, Staff Assistant

Fahmida Ahmed, Office of Sustainability
Brodie Hamilton, Parking & Transportation
Tom Zigterman, Water Infrastructure
Gerry Hamilton, Facilities Energy Management
Robert Reid, Energy Services
Dean Murray, Thermal Energy Distribution
Rich Bitting, Power Systems
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Office of Sustainability
Institutionalizing Sustainability through Programs, Evaluations, Education and Outreach

1. Strategic Planning
2. Evaluations & Reporting
3. Communication & Education
4. Academic Integration
5. Behavioral Programs
6. Participation Campaigns
SEM Finance & Administration

- General Funds Budget Management
- Service Center Business Management
- Utility Rate Making
- Utility Metering & Billing
- Business Systems
- Capital Accounting
- Management Analysis
Parking & Transportation Services

We provide a comprehensive, responsive, and balanced system of access and mobility for the Stanford University community.
Stanford Parking & Transportation Services

Total P&TS $17.5 mil

GUP TDM $2.5 mil

Marguerite $5.8 mil

General Operations $8.7 mil

SIP Transportation $.5 mil
Key Programs

- Parking (operations and retail)
- Transportation Demand Management
- Marguerite
- Bicycle Program
Commute (Drive Alone) Trends

Drive-Alone Rate Trends Since 2002

- Drive-Alone Rate (employees only)
- Drive-Alone Rate (all off-campus commuters)
Stanford Utility Services

Water & Energy

Total Utilities
$72.3 mil

- Electricity $22.2 mil
- Steam $21.0 mil
- Chilled Water $20.1 mil
- Domestic Water $5.6 mil
- Lake Water $1.3 mil
- Sewer $2.1 mil
Deliver reliable high quality water from sustainable diversified supplies, cost-effectively manage efficient water use and water distribution, wastewater collection, and storm drainage systems; and manage the operation and maintenance of roads, bridges and dams.

- Water Conservation
- Water/Environmental Quality
- Water/Civil Management & Planning
- Roads, Bridges, Dams
- Water Systems Engineering
- Water Systems Operations
Groundwater Wells

Searsville Reservoir

Lakes & Creeks

6 mil gal to campus

1 1934

2 1936

3 2003

4 2004

1.5 mil gal

Stanford storage tanks

Felt Reservoir

to campus

SFPUC Hetch Hetchy lines

1956

to campus

Domestic Water

Groundwater Wells

Searsville Reservoir

Lakes & Creeks

6 mil gal to campus

1 1934

2 1936

3 2003

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1.5 mil gal

Stanford storage tanks

Felt Reservoir

to campus

SFPUC Hetch Hetchy lines

1956

to campus

Domestic Water
## Water Sources

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<tr>
<th>Source</th>
<th>mgd</th>
<th>acre-feet/year</th>
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<tr>
<td>SFPUC Hetch Hetchy</td>
<td>2.16</td>
<td>2,400</td>
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<tr>
<td>Lakes &amp; Creeks</td>
<td>.72</td>
<td>800</td>
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<td>Groundwater Wells</td>
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<td>310</td>
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<tr>
<td><strong>Total</strong></td>
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<td>1,110</td>
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<td>CEF Cooling Tower Blowdown</td>
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Hetch Hetchy System
Facilities Energy Management

**Mission:** Ensure facilities meet teaching and research needs as efficiently as possible

**Existing Buildings**
- Energy Efficiency retrofit projects
- Energy Conservation programs
- Energy systems control standards

**New Buildings**
- Benefits / costs assessment
- Energy modeling guidelines
- Energy systems commissioning & performance verification
Facilities Energy Management (FEM)

The FEM Team includes multiple specialties. The Energy Efficiency Programs and Project Support include:

- Susan Vargas, Manager, Facilities Energy Efficiency
- Leslie Kramer, Sr. Energy Engineer
- Shalini Singh, Energy Engineer
- Joyce Dickerson, Director, Sustainable IT
Early Campus Power

Ca. 1889 Power House under construction

Early generators powered by steam engine.

Note coal smoke.
Energy Services

Providing reliable and efficient electrical, steam and chilled water services to the Stanford Campus and Medical Center. The primary missions include managing Stanford’s contract with Cardinal Cogen and overseeing the operations and maintenance of the central plant.
Thermal Energy Distribution

Steam/Hot Water Systems
• 10 miles of underground piping
• Tunnels & Direct Bury
• Steam Supply & Condensate Return

Chilled Water System
• 7 miles of underground piping
• Richard Souza and Chilled Water Techs (Bob, Chris, Jack, Ken, Vince)
Thermal Team

Dean, Juliana, Brian, Mike Mayo and Steam Techs Terry, Charles, Chas, Ricci, Ken, Gil, Joe, and hats off to the RM crew too
Power Systems

We provide reliable, cost-effective, sustainable electric power and light.
Electric Service Areas

- Palo Alto Power
- PG&E
- Stanford Power
An Initiative Involving All

Energy And Climate Action 2011