Sustainable Planning
for Long-Term Energy Cost Reduction
Falling off the scale

Change in global mean temperature, °C

- Actual
- Computer models

Source: Ed Hawkins, University of Reading; CMIP5 model dataset

*Confidence interval
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Source: Modern Shale Gas Development in the United States, US Department of Energy
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What would happen if: it snowed in Las Vegas every year?
What would happen if: the Chinese would drive as much as we do?
What would happen if: we had another World War?
What would happen if: a super volcano erupted?
Huge volcano sleeps under Yellowstone

Reading the geochemical fine print found in tiny crystals of zircon and quartz, scientists are forming a new picture of the life history — and a geologic timetable — of a type of volcano in the western United States capable of dramatically altering climate sometime within the next 100,000 years. These are volcanoes that occur over “hot spots” in the Earth and they erupt in catastrophic explosions, sending hundreds to thousands of cubic kilometers of ash into the atmosphere and wreaking climatic havoc on a global scale. By comparison, the eruption of Mount St. Helens sent a mere two cubic kilometers of ash skyward.

Comparative Volumes of Eruptions In Cubic Kilometers

<table>
<thead>
<tr>
<th>Eruption</th>
<th>Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mount St. Helens (1980)</td>
<td>2 km³</td>
</tr>
<tr>
<td>Lava Creek Tuff (630,000 years ago)</td>
<td>1000 km³</td>
</tr>
<tr>
<td>Huckleberry Ridge Tuff (2 million years ago)</td>
<td>2500 km³</td>
</tr>
</tbody>
</table>

The 1980 eruption of Mt. St. Helens produced an ash zone that extended over 30 km — miniscule when compared to the areas below.

The Lava Creek eruption occurred 630,000 years ago.

The Huckleberry Ridge eruption occurred 2 million years ago.

Could It erupt again?
The near-clockwork timing of eruptions at Yellowstone — 2 million years ago, 1.3 million years ago and 630,000 years ago — show a regular periodicity of cataclysmic eruptions, and suggest a high probability of a future catastrophic eruption. Yet, the zircon and quartz data show the geochemical signature of a waning cycle.

Dan Brennan, Mary Diman/UW-Madison News Graphics
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LEGAT ARCHITECTS
CLC Sustainable Master Plan / Long-Term Energy Goals

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SUSTAINABLE PLANNING for Long-Term Energy Cost Reduction
Scalable Infrastructure for becoming Grid-Free

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LEGAT ARCHITECTS
Joliet Junior Community College / Natural Science Addition
LEED-NC SILVER Certified (pending)

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LEGAT ARCHITECTS
Oakton Community College / Health & Science Career Center
LEED-NC GOLD Certified (pending)

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SUSTAINABLE PLANNING for Long-Term Energy Cost Reduction

College of Lake County/Science and Engineering Building
LEED-NC PLATINUM Certified (pending)
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SUSTAINABLE PLANNING for Long-Term Energy Cost Reduction

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Price of PV systems in Germany
(average of rooftop systems up to 100kWp, excluding VAT)
data source: BSW-Solar, Statistische Zahlen der deutschen SolarStrombranche (Photovoltaik)
$\text{Available Grant Funding}$

- Energy-Efficient Building Systems
- Renewable Energy Systems
- Green Roof Installations
- LEED/Sustainable Design

*Solar*

*Geothermal*

*Wind*

**Sustainable Planning** for Long-Term Energy Cost Reduction

College of Lake County LEGAT ARCHITECTS
2004 Available Grant Funding

$25,000 Building Commissioning

$50,000 Pond-based Geothermal

$75,000 Total Grant Funding to Owner

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LEGAT ARCHITECTS
2008 Available Grant Funding

- $135,000 LEED/Sustainable Design
- $90,000 Geothermal HVAC – Source A
- $116,000 Geothermal HVAC – Source B
- $176,200 58 kW Photovoltaics Array

Total Grant Funding to Owner: $517,200

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2012 Available Grant Funding

$500,000 LEED Platinum Design + PV
$250,000 Geothermal HVAC – Source B

$750,000 Total Grant Funding to Owner

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LEGAT Architects
Thank you!

David Agazzi  
Vice President, Administrative Affairs  
College of Lake County

Jeffrey Sronkoski, AIA, LEED AP  
Principal, Higher Education  
Legat Architects

Vuk Vujovic, LEED AP BD+C  
Director of Sustainable Design  
Legat Architects

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LEGAT ARCHITECTS