



# Proposed ACME Renovations

Saving the company money  
and making us more self  
sufficient, one step at a time

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# Why have a more self sufficient facility?

- Cheaper for us over time
- Improve air and water quality
- Conserve and restore natural resources
- Enhance and protect biodiversity and ecosystems

# Proposed Building Renovations

- Solar Panel Installation
- Installing cisterns in order to harvest and treat rainwater
- Introduction of geothermal wells

## Current Practice

### -Burning Fossil Fuels for electricity

- Currently we are burning fossil fuels in order to provide electricity for the facility.

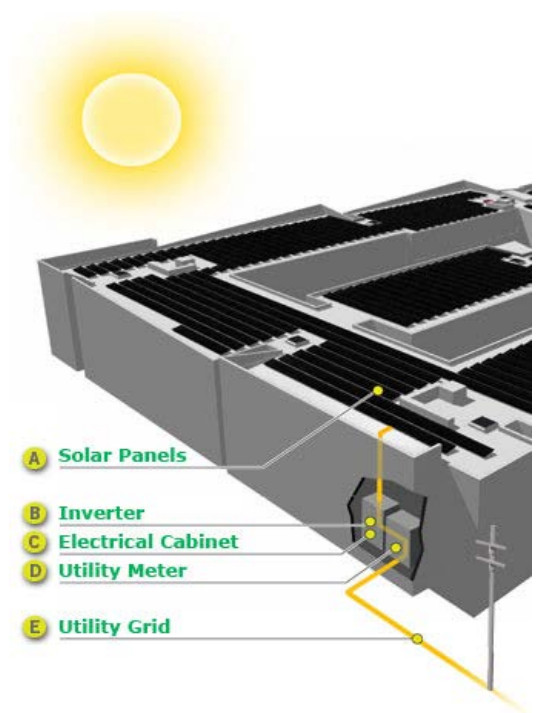
#### Problems:

- ~Releases pollutants into the air and water
- ~We are using non-renewable resources

# Proposed Renovation

## -Addition of Solar Panels

- 1: Solar Panels
  - Covert light into energy
- 2: Inverter
  - Converts Solar electricity for building usage
- 3: Electric Meter
  - Whenever production exceeds use, it keeps track and we will get credited on the next bill
- 4: Performance Monitoring
  - Monitors our electricity usage and patterns.



Information and photo taken from Solar City Website

# Benefits to Solar Paneling

- ~ Reduction of green house gases caused by the use of fossil fuels.
- ~ Solar energy does not require expensive raw materials like coal and oil to be extracted, refined, and transported to our facility.
- ~ In addition, solar energy does not result in the destruction of forests and eco-systems that occurs with most fossil fuel operations.
- ~ Over the next few years we will see a payback with the installation



## Current Practice

### -Our water supply

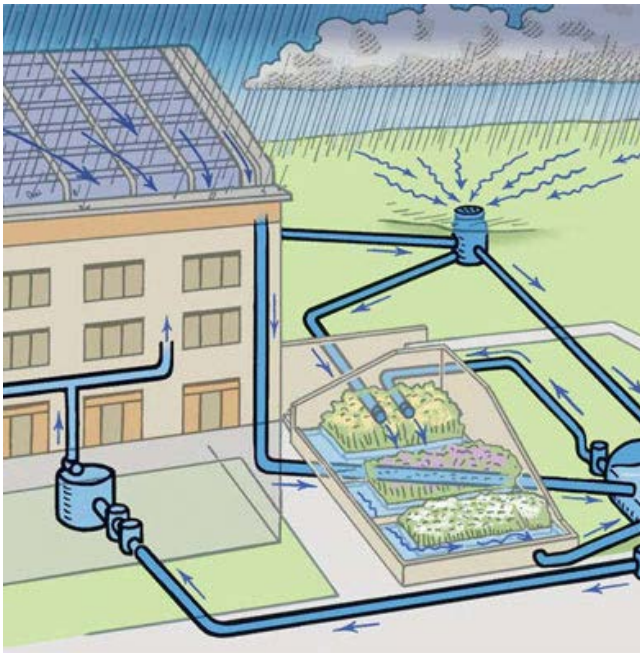
- Currently all the water we use from flushing toilets to drinking is coming from a water supply company.

Problems:

- Water comes from well or surface area such as rivers, lakes or reservoirs, which impacts our ecosystem negatively.
- Cleaning this water involves the use of chemicals, as well as, the water has mineral additives, it is not pure.
- It takes a large amount of energy for the companies to adequately clean the water that we are using.

# Proposed Renovation

## -Rainwater Harvesting and Treatment at ACME



- ~ Rain water runs down the roof
- ~ Filter removes debris
- ~ Water is stored in underground cisterns containing pump and filter

\*\*Using an Ozone filter along with UV light purifies the water for consumption or for use in the laboratory.

### Benefits:

- ~ Promotes water and energy conservation
- ~ Reduces chemicals used to purify water
- ~ Reduces demand on ground water, rivers, and lakes



## Current Practice

### -Burning Fossil Fuels to control the temperature in the building

- Currently we are burning fossil fuels in order to control the heating in our building.

#### Negative Aspects:

- Releasing pollutants into the air and water
- Using a non-renewable resource



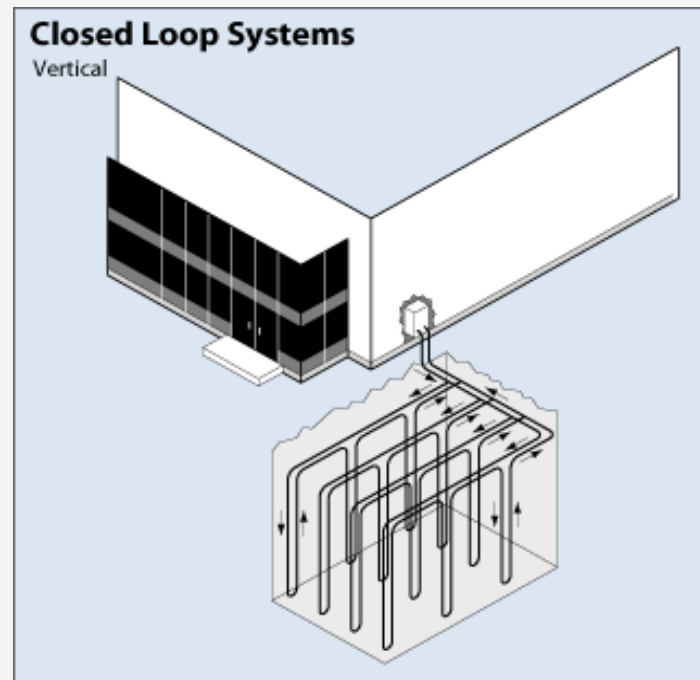
A geothermal heat pump is an electrically-powered device that uses the natural heat storage ability of the earth to heat and cool our building.

### Benefits:

- ~Reduces our emissions of green house gases and air pollutants
- ~Very little electricity is used in the process
- ~An estimated 3-5 year payback for this installation

## Proposed Renovation

### -Introduction of Geothermal Wells



Information and picture from the U.S. Dept. of Energy

- Installation of solar panels  
\$70,000
- Addition of Rainwater Harvesting equipment  
\$50,000
- Introduction of geothermal wells  
\$85,000

## Estimation of Total Cost of Renovations

A total of \$205,000 will be needed in order to make ACME more green and self sufficient.

This is a large number upfront but over time each renovation will pay off.

# References

- <http://www.solarcity.com/commercial/how-solar-works.aspx>
  - Explains how solar panels work
- <http://energy.gov/energysaver/articles/geothermal-heat-pumps>
  - Explains how closed loop geothermal wells work
- <http://www.harvesth2o.com/faq.shtml#19>
  - Explains how rainwater harvesting filters the water.