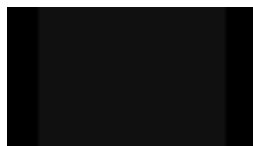




Let's Set the Stage

Imagine you are watching commercials during the Superbowl. 😊
Maybe you have just watched a very neat multi-million dollar commercial
from an energy company – an oil, natural gas, or utility company;
and
then this short (1 minute), \$0 dollar commercial plays.....
anyway, just imagine..... Don't you wonder?



Solar Energy in Texas – Don't You Wonder?

<https://www.youtube.com/watch?v=9FudFriE1J4>



Here Comes the Sun! The Future of Solar Energy! Is Here TODAY!

*Solar energy around the world, the US, Texas,
and closer to home*

April 2014



Plano Solar Advocates (PSA)

www.planosolar.org

- Who we are:
 - A volunteer grass-roots group of Plano citizens (non-profit)
 - To learn more see www.planosolar.org/p/about.html
 - Especially see - *Why is Plano Solar Advocates focused on advocating for solar electric generation?*
- Our Mission:
 - To increase the awareness and expand the use of Solar Energy for electricity generation in Plano.
- Our projects
 - see www.planosolar.org/p/projects.html



Plano Solar Advocates - Community Outreach

- **Join us!** - If you are interested in becoming more involved, please contact us through the email address listed below. We usually get together on a monthly basis to discuss ways to promote our mission and achieve our goals.
- To help increase awareness, Plano Solar Advocates is available to speak to local groups - businesses, schools, church/faitth organizations, civic groups, HOAs, etc.
- See www.planosolar.org to learn more & contact us at planosolar@gmail.com



First Things First

What is the least expensive and cleanest source of energy?



Answer

Energy we don't use – the NEGAWATT!

Conservation (turn off the light)

Efficiency (use LED light)



Why Solar, Why Now?

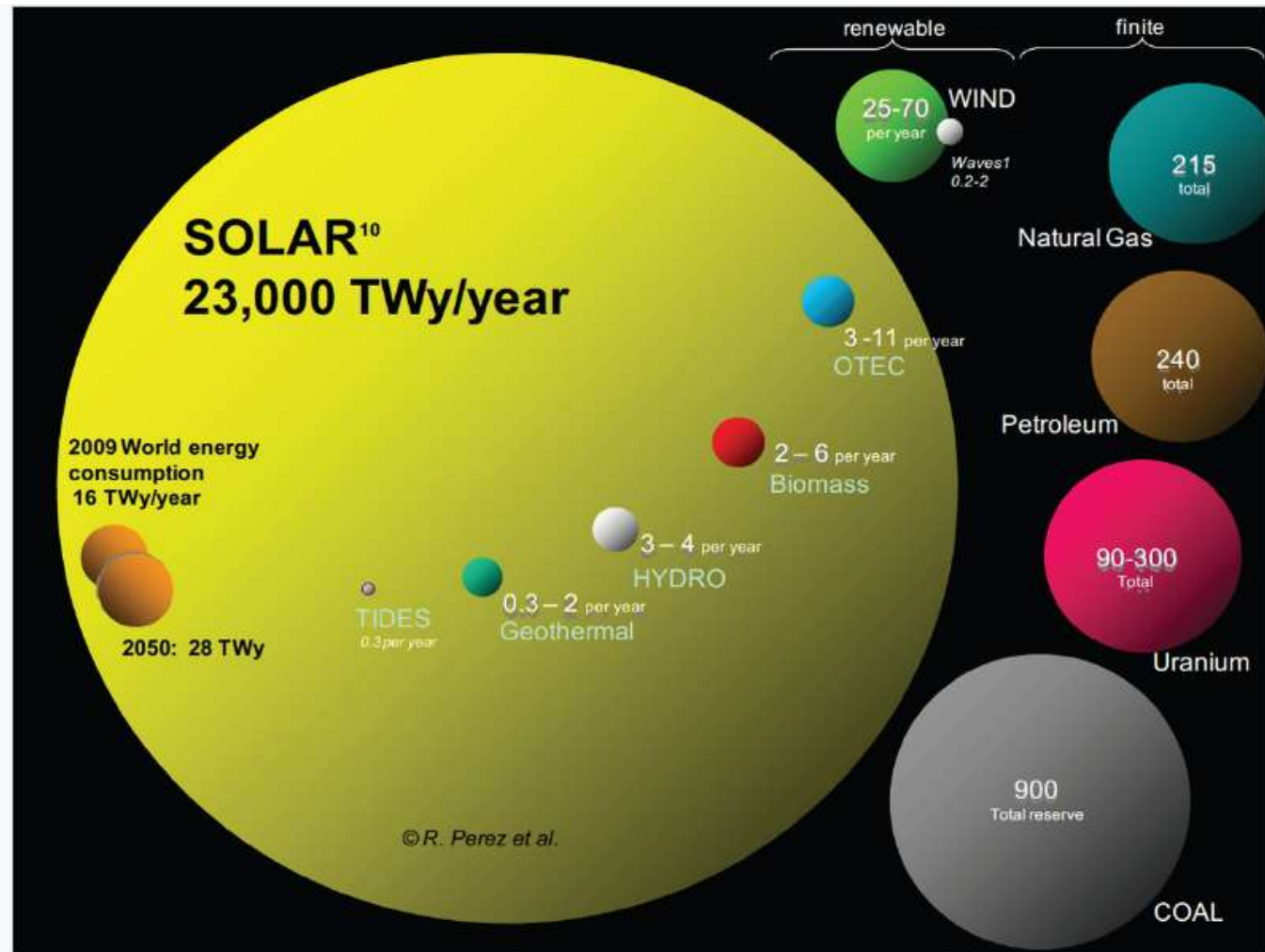
1. Huge Potential Solar Resources
2. It's not a research or science fair project anymore



The amount of energy that reaches the earth in **one hour** is equivalent to what the entire world consumes in **one year**!

Watch Energy 101: Solar PV

www1.eere.energy.gov/multimedia/video_energyl01_pv.html

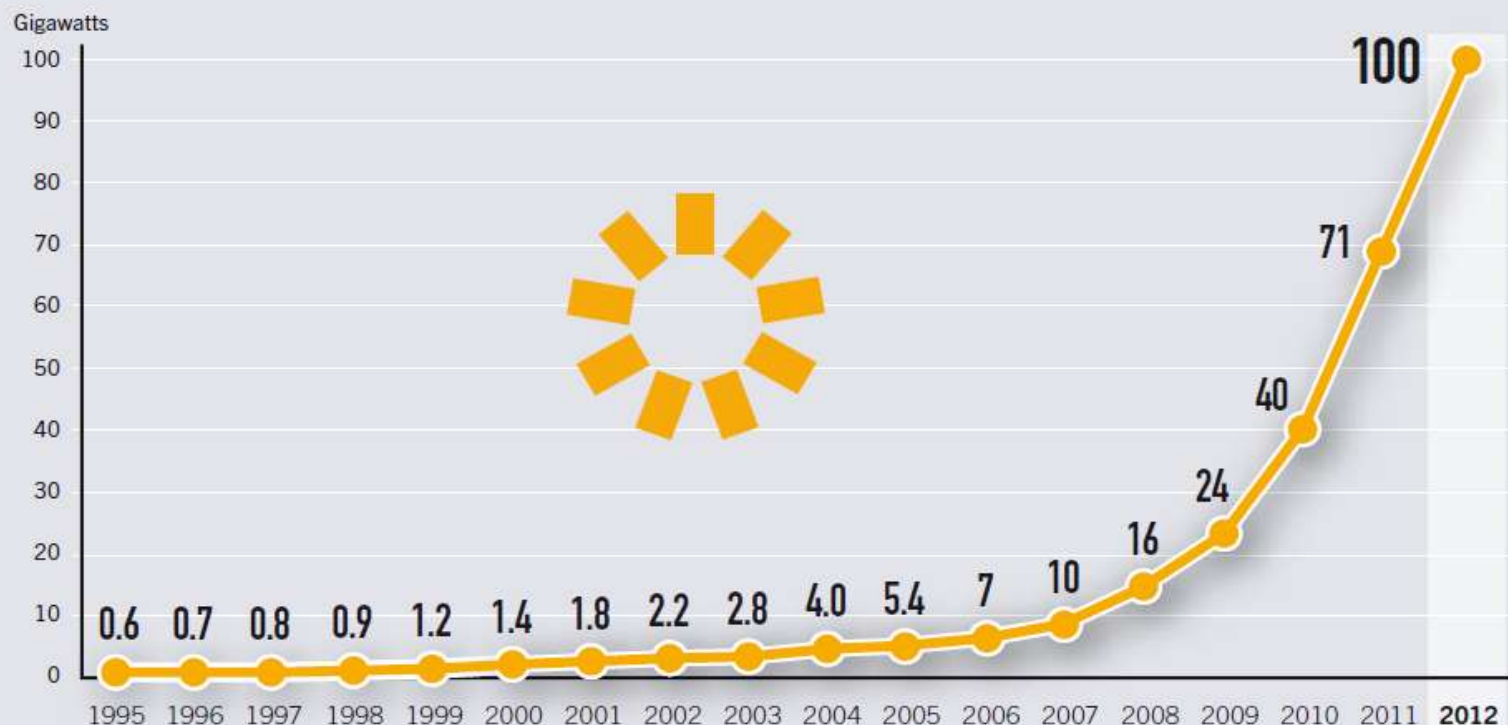




Now more solar energy capacity installed around the world than we use in Texas on a bright sunny summer day (65-70 GW)!

SOLAR PHOTOVOLTAICS (PV)

FIGURE 11. SOLAR PV GLOBAL CAPACITY, 1995–2012



From REN21 Renewables 2013 Global Status Report



PV Solar

- Key Benefits
 - **Abundant & local energy resource**
 - Local electricity generation means less energy waste
 - **Clean Energy** – electricity generation with no air, water, or noise pollution (and no water required to produce electricity)
 - No moving parts – low or NO maintenance
- And what else?
 - Cost competitive for **rooftop distributed generation**
 - Great **consumer choice** to generate some of your own electricity and hedge your long term electricity costs!



PV Solar

- Key Benefits (cont)



Extract from

[Shared Solar - Creating Universal Access to Solar Energy](#), February 2014

www.votesolar.org



Solar Ready II

The North Central Texas Council of Governments
currently has an initiative underway called
Solar Ready II.

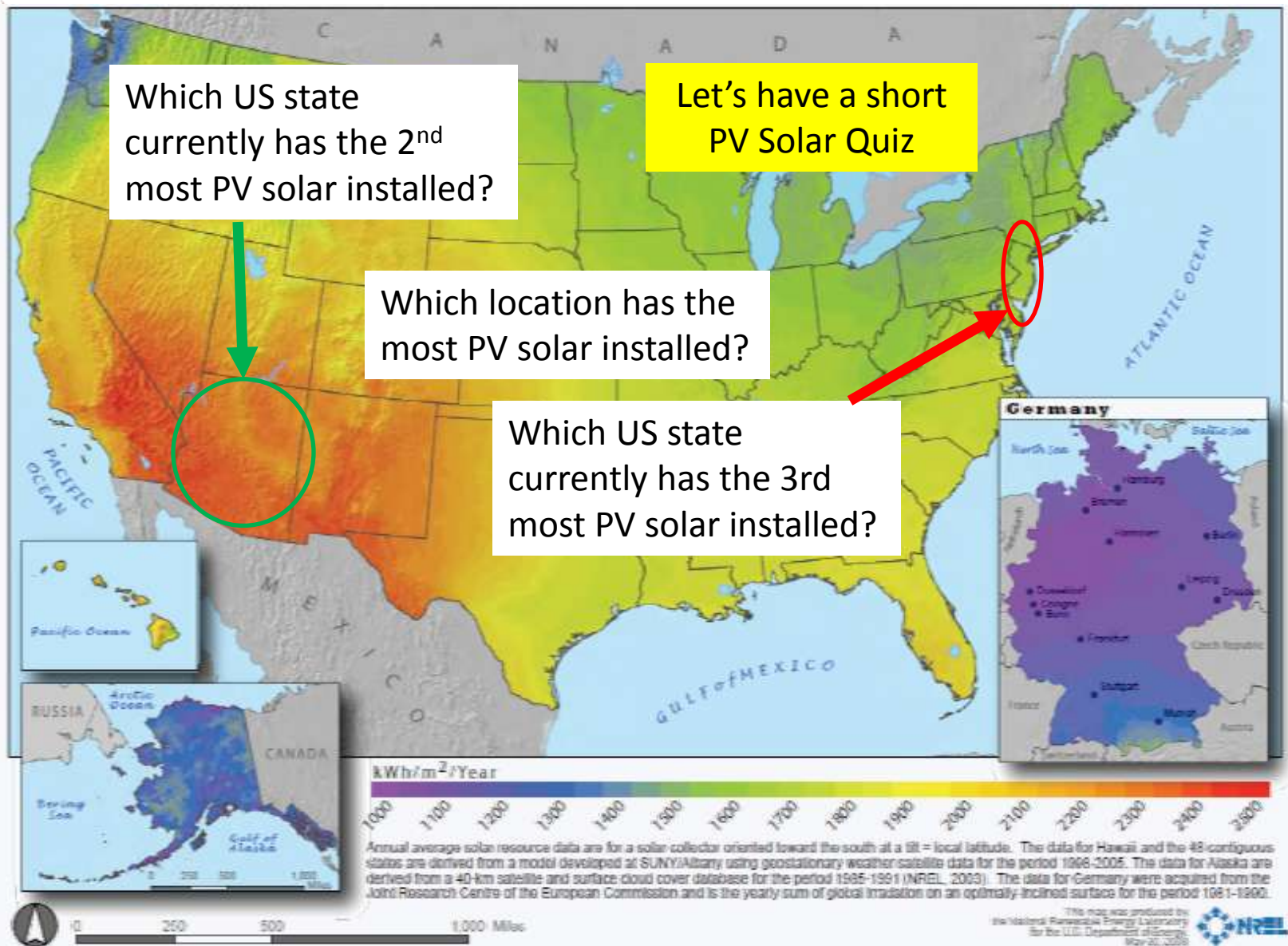
Check out this 2 minute video to learn about it.
It features one of our 2013 Solarize Plano
participants.

Also see www.nctcog.org/solar



Solar Ready II - North Central Texas Solar Initiative

<https://www.youtube.com/watch?v=jKzkSczvJgA>





Potential PV Solar Energy in Texas

- Utility Scale PV Solar
 - 20,000 GW in Rural Areas
 - 154 GW in Urban Areas

1 GigaWatt (GW) =
1,000 MegaWatts (MW) =
1,000,000 KiloWatts (kW) =
1,000,000,000 Watts (W)

- Distributed Generation on Rooftops – Residential and Businesses
 - 60 GW

Ref: NREL 2012

Conclusion - Tapping just 0.34% of this total potential could power all of the electricity needs in Texas on a bright summer day!



PV Solar – US and Texas

Ref: US Solar Market Trends 2012, Interstate Renewable Energy Council, October 2013

**Table 4: CUMULATIVE TOP 10 STATES
Ranked by Grid-Connected PV Cumulative
Installed Capacity through 2012**

	MW _{DC}	Market Share
1. California	2,559	35%
2. Arizona	1,106	15%
3. New Jersey	956	13%
4. Nevada	350	5%
5. Colorado	300	4%
6. North Carolina	208	3%
7. Massachusetts	207	3%
8. New Mexico	203	3%
9. Hawaii	199	3%
10. New York	179	2%
All Other States	1,106	15%
Total	7,374	--

As of end-2012, Texas is estimated to have approximately 131 MW

US Top Commercial Solar Customers (mid 2013)

1. Walmart (89.4 MW)
2. Costco (47.1 MW)
3. Kohls (44.7 MW)
4. Apple (40.7 MW)
5. IKEA (35.1 MW)



PV Solar Around Texas

Location/Area	Data as of	Approximate Number of Installations	Approximate Total Installed Capacity (MW)
<u>Texas</u>			
DFW area	end of 2012	600	7.9
Austin area (exc utility scale plants)	end of 2012	2,300	12.5
San Antonio area (exc utility scale plants)	<i>Nov 2013</i>	1,200	12.5
Texas (total including utility scale plants)	end of 2012	4,200+	131

Austin Utility Scale Installation



30MWac Webberville (near Austin) Solar Farm
http://www.youtube.com/watch?v=Z7_VticT-6U

San Antonio Utility Scale Installations

- 45 megawatts (ac) installed
- Additional 400 MW in planning and construction to be completed by 2016

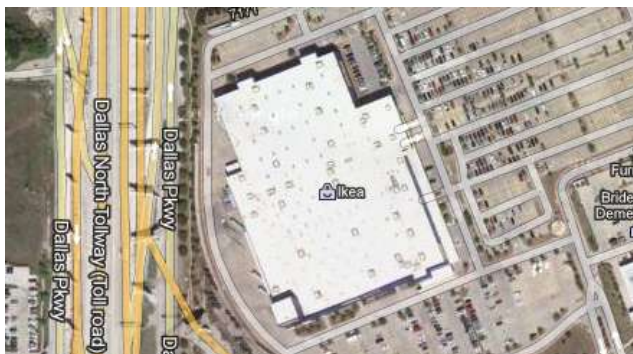


14MWac San Antonio
Blue Wing Solar Farm



IKEA, Frisco, Tx

Before Installation



The equivalent of

- reducing 1,016 tons of carbon dioxide (CO₂),
- eliminating the emissions of 181 cars,
- or powering 115 homes yearly .

(calculating clean energy equivalents at www.epa.gov/cleanenergy/energy-resources/calculator.html)

After Installation



- In operation, August 2012
- 912 kW system, 3,780 panels
- 1,336,300 kWh estimated annual energy production





2014 Solarize Plano Project

The Plano Television Network prepared this 2 minute video about the 2014 Solarize Plano Project.

Watch to learn more.



Solarize Plano 2014

<https://www.youtube.com/watch?v=k0aa8cBYcDE>

If you don't live in Plano,
start a "solarize" group purchase in your neighborhood.

See [DFW Solarize Projects](#).

Don't live in the North Texas area,
check out www.SolarizeTexas.org to learn about
other solarize projects starting to **shine** all across Texas

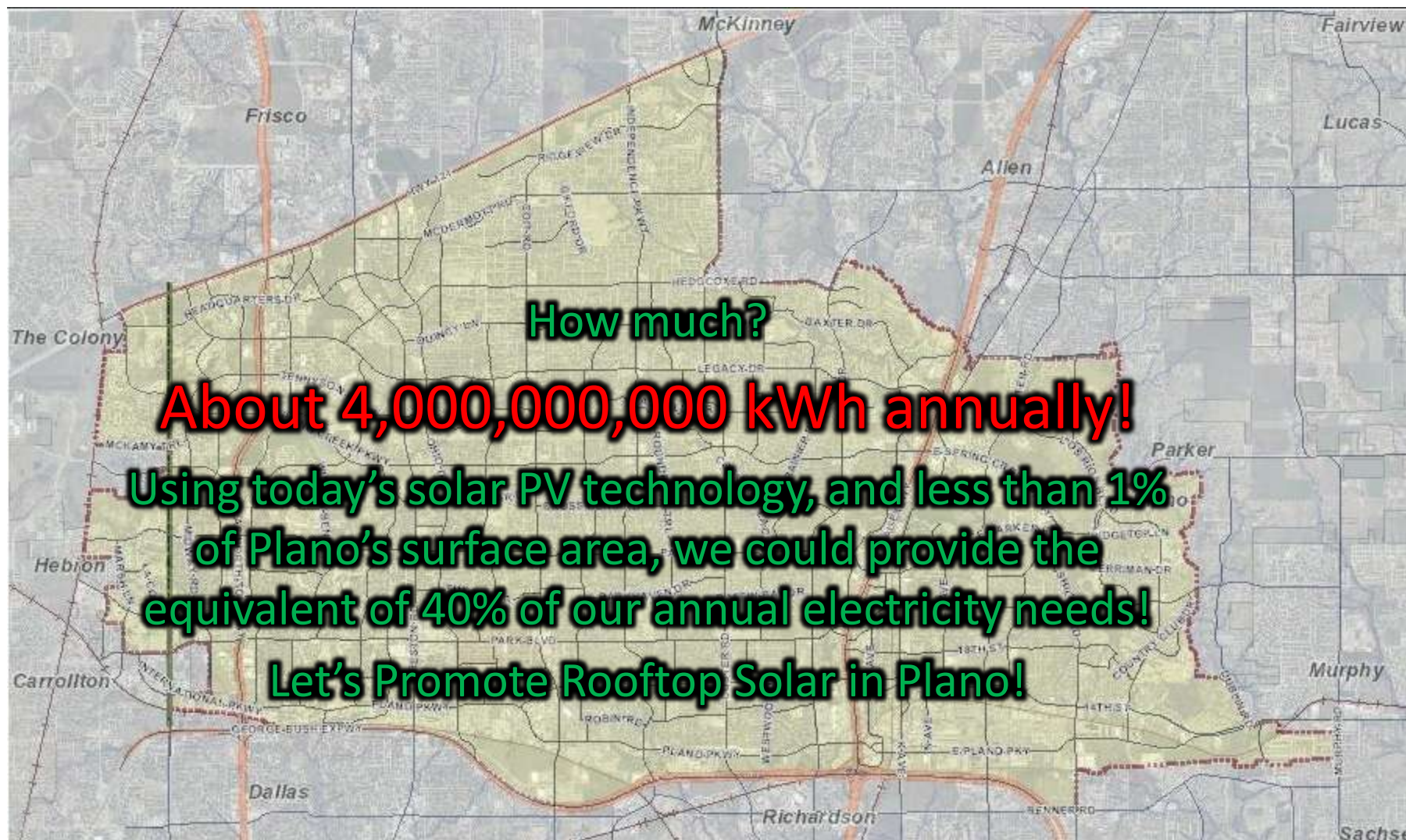


Plano PV Solar Installations

- At the end of 2013, across Plano there were approximately 75+ installations, totaling **825 kW** of PV solar capacity
- Annually producing **1,155,000 kWh** of clean local energy
- Producing annual environmental benefits :
 - 790 tons of CO2 saved
 - Offset the equivalent of 20,460 trees
 - Saved the equivalent of 93,555 gallons of gasoline
 - Reduced the amount of water used for electricity generation by 433,125 gallons
- However, Plano uses **lots and lots of electricity** every year!



Plano Electricity Usage





2014 Solarize Plano Project

[Jan 27, 2014 City of Plano Press Release](#)

As proponents of solar energy, **Live Green in Plano** (livegreeninplano.com) and **Plano Solar Advocates** (www.planosolar.org) will offer the 2014 Solarize Plano program.

Last year the Solarize Plano pilot program helped more than 20 Plano homeowners install solar photovoltaic (PV) systems with a total capacity exceeding 100kW. Solarize Plano will connect residential homeowners who are ready to install solar systems with local, qualified installers. For a limited time, residents will also be able to take advantage of local utility incentives. This “group purchase” process will reduce anxiety typical with a large purchase and increase customer satisfaction throughout the quote and installation process. Plano Solar Advocates volunteers will educate, coordinate and provide technical support for homeowners (and all other stakeholders) throughout this process.

Using PV solar to generate electricity at homes and businesses is not a research project anymore. Install PV solar at your home and join the 75 installations across Plano, 1,000 across the DFW area, 4,500 across Texas and 250,000 across the United States.

To learn more about the program, key dates and enrollment, visit www.SolarizePlano.org
(*watch 2 minute youtube introduction video*)
www.youtube.com/watch?v=k0aa8cBYcDE



Group Solar Purchase

- All across the United States, groups are using this "**solarize**" approach to enable the installation of clean and cost effective solar energy for distributed electricity generation.
- **Accelerates PV Solar adoption in a given area**
- **Purchasing Solar Collectively with Solarize**
 - 3 min video about "solarize" concepts is available at this URL -
https://www.eeremultimedia.energy.gov/solar/videos/purchasing_solar_collectively_solarize



Group Solar Purchase

Key Point

- Lot of people want to learn more about solar and install solar, but they don't know where to get started

With Solarize/Group Purchase

- Educate consumers
- Simplify the process
- Discounted pricing
- Limited time offer

Good Reference Material:

1. [Solarize Guidebook](http://www4.eere.energy.gov/solar/sunshot/resource_center/resources/solarize_guidebook_community_guide_collective_purchasing_residential_pv_systems) - a community guide to collective purchasing of residential PV systems (http://www4.eere.energy.gov/solar/sunshot/resource_center/resources/solarize_guidebook_community_guide_collective_purchasing_residential_pv_systems)
2. Community Power Network website - See <http://communitypowernetwork.com/> and [Solar Group/Bulk Purchase](http://communitypowernetwork.com/bulkpurchase) - <http://communitypowernetwork.com/bulkpurchase>



Solarize Plano Project

Why do solar companies offer lower installed prices for solarize project? Some examples:

- Volume equipment purchases
- Smaller and known geographical area
- Single project permitting jurisdiction (city of Plano)
- Reduced customer acquisition costs (customers prescreened)

Get Together, Learn Together, **Lower costs together** =
Local Clean Energy Together



Participant Decision Points

1. Decide to Enroll – go to www.solarizeplano.org to enroll

NOW

- This is NOT a commitment to buy. This is an agreement to look at the options and learn more about solar.
- Learn about how to determine the size of a system you will need, its approximate cost, and other considerations and tradeoffs
- MUST do a little homework!
 - Determine your annual electricity usage in kWh
 - Think about how energy efficient is your home

2. Decide to move forward with a Site Assessment

Respond between
March 15 and
April 15

- This will be done by the company selected by the participant RFP Review Team.

3. Decide to Install

Commit between
April 15 and
May 15

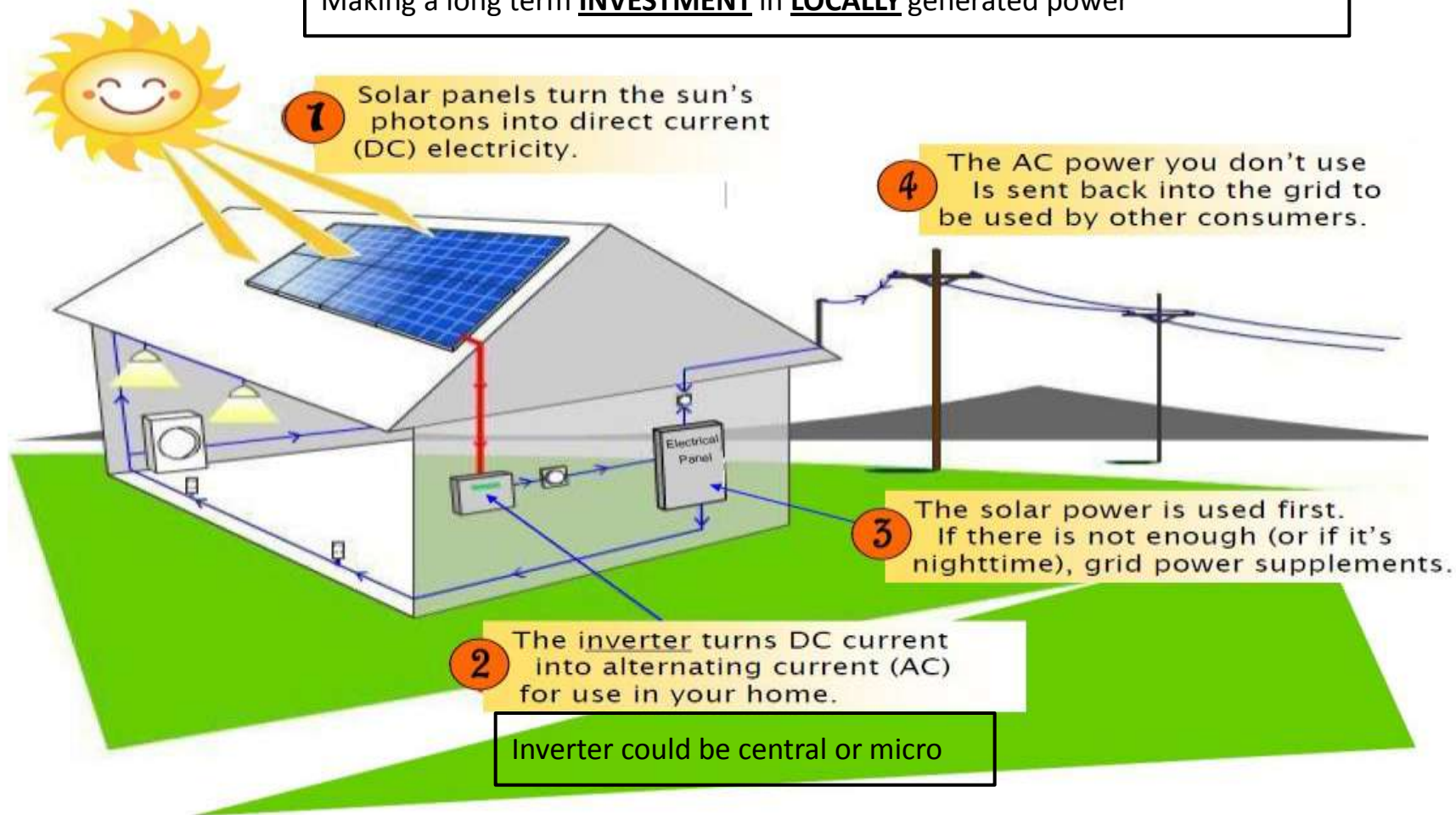
- Individuals sign a contract directly with the selected company. This is when you are making a financial commitment. The more persons that commit to install systems, the better the overall discount.



Solar PV Electric System

Example - batteryless grid-tied

Making a long term **INVESTMENT** in **LOCALLY** generated power





Residential Solar 101

The basic principles of solar power generation are easy to understand, but beyond the actual technology, there are several questions Solarize participants need to consider before deciding to install rooftop solar on a residential home. The following topics should be included in a Solarize education/information session:

What size solar system do I want/need?

- Available roof space, condition, orientation (south facing/tilt angle) & potential shading (not all homes are a good fit)
- Percentage of annual energy consumption homeowner wants to offset with solar
 - Net-metering potential (AC power sent back to the grid), special considerations for Texas
 - Budget

How much does it cost?

- Installed cost (typically quoted in \$/DC Watt) normally includes equipment, labor and all installation related costs (permits, inspections, design, etc.)
- Cost can be lowered with utility incentives/rebates (Oncor, Municipal or Co-op and 30% Federal Investment Tax Credit - i.e (Retail installed cost – utility incentives – Federal ITC = Final customer out of pocket cost)
- Include discussion about lifetime cost benefits per kWh, which is often below current utility cost per kWh

Enroll at www.solarizeplano.org to learn more!
Watch our Information Sessions online, see “videos” page



Tell Others about Solarize Plano!

The more installations, the better!

- Some suggested ways to spread the word are listed below. Let us know of any ideas that you have to further help.
 - Tell your neighbors & coworkers
 - If you have an HOA or Neighborhood Association, ask them to email their members about the program
 - Put an announcement in your company newsletter or any other community newsletter
 - If your neighborhood is setup on www.nextdoor.com, post a message about the project
- Here are some references you can use when spreading the word!
 - Our project website - www.solarizeplano.org
 - Dallas Morning News NeighborsGo article - [Solar energy program enrolling through April 15 in Plano](#)
 - City of Plano Press Release - [Affordable Solar Energy Options Now Available in Plano](#)
 - Plano Star Courier article - [2014 Solarize Plano program seeks to energize community](#)
- FYI - Don't live in Plano (*outside scope of Solarize Plano Project*)
 - Check out [DFW Solarize Projects](http://www.ntreg.org/solarize.shtml) (www.ntreg.org/solarize.shtml)
 - Don't live in the DFW area? Check out SolarizeTexas.org to learn about other solarize projects starting to **shine** all across Texas!



Q&A

THANKS!

Larry Howe (rlhowejr@gmail.com) and Bob Litwins (rlitwins@gmail.com)

To Learn More about Plano Solar Advocates

www.planosolar.org

To Learn More about the 2014 Solarize Plano Project

www.solarizeplano.org

To Learn More about the North Texas Renewable Energy Group

www.ntreg.org

To Learn More about the Texas Solar Energy Society

www.txses.org