Project Sunroof
Assessing Neighborhood Solar Potential

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Neighborhood: Between NE 65th Street and NE 63rd Way, City of Redmond

State the problem, phenomenon, or driving question
How can I raise awareness of solar potential in my neighborhood, and encourage my neighbors to solarize?

Impact Statement

If I solarize my home, I will zero out my energy consumption as well as my energy bill. Yes, it costs a lot for the initial installation, but there are great incentives that reduce this cost. Plus, the system pays for itself in 7-10 years.

At that point, my energy is free for the rest of my life. If I can demonstrate that solarizing my home is such a fantastic deal, then I can convince other homeowners in my neighborhood to solarize their homes.

If many people in my neighborhood solarize, I can share the data with my city government to encourage them to support the momentum I have helped generate by offering additional incentives or stronger green building codes for all homes in my city.

If my city becomes a solar city, we can catch up to and surpass the carbon emissions reduction goals that we committed to as part of the King County Cities Climate Collaborative. If the K4C surpasses its goals, we can get other cities to join the collaborative effort and we will become a model for the region, the nation, and the world.

Along the way, three other benefits are realized.

1. Sustainability Ambassadors will receive funding through our partnership with Sphere Solar Energy to support a paid internship to manage the Solar Neighborhood Challenge.

2. We will learn a lot about green jobs in the solar sector.

3. More underdeveloped communities will prosper from new solar projects through the international charitable work of Sphere Solar Energy

Provide brief background knowledge

Check out Google's Project Sunroof project here

What data sources does Project Sunroof use?

- *Imagery and 3D modeling and shade calculations from Google.*
- *Weather data from the National Renewable Energy Laboratory (NREL).*
- *Utility electricity rates information from Clean Power Research.*
- *Solar pricing data from NREL's Open PV Project, California Solar Initiative, and NY-Sun Open NY PV data.*
- *Solar incentives data from relevant Clean Power Research, Federal, State and local authorities as well as relevant utility websites.*
- *Solar Renewable Energy Credit (SREC) data from Bloomberg New Energy Finance, SRECTrade, and relevant state authorities.*
- *Aggregated and anonymized solar cost data from Aurora Solar software.*

Sustainability Ambassadors' Solar Neighborhood Challenge (Scroll down to see FAQ)
Solar Neighborhood Future
Green jobs in the solar sector
International charitable work or Sphere Solar Energy

Show how the project supports community goals (local policies, plans or performance measures)

Solar power is a very effective way to reduce a city's carbon footprint. Many cities in King County have pledged together to set goals and timelines for carbon emission reductions. These commitments are part of the King County Cities Climate Collaborative (K4C).

The City of Redmond's plan includes *"a commitment to reduce community-wide emissions by 80% by 2050, with an aspirational community-wide greenhouse gas reduction target of carbon neutrality by 2050. It identifies 24 strategies and 169 actions to work towards these goals."*

Actions in the City of Redmond's plan are categorized into six key sustainability focus areas – Transportation and Land Use, Buildings and Energy, Material Management and Waste, Natural Systems, Water Management, and Climate Change and Resilience."

To meet the goals of the Energy section of the Redmond Plan, solar is a very big component. So it will really matter if lots of homes start pushing for more solar and if the city can offer incentive packages to support the transition.

Here are more examples of how cities are trying to reduce their carbon footprint through policy making, goal setting, and projects.

Washington has a goal of 100% clean, renewable energy by 2045
Reducing Redmond's Emissions by 80%, by 2050
Redmond Environmental Stewardship Plan
King County Strategic Climate Action Plan
King County Cities Climate Collaborative (also see K4C Climate Action Tool Kit)
Seattle Office of Sustainability and the Environment
Seattle Climate Action Plan
Bellevue Environmental Stewardship Plan
Kirkland Sustainability Master Plan
Redmond Sustainability Plan
Issaquah Climate Action Plan
Burien Climate Action Plan
Edmonds Climate Action Plan
Sustainable Shoreline
Bothell Sustainability

Document current conditions (Using Google's Project Sunroof)

1. How many households are in my neighborhood? 1**4 Households**

2. How many homes already have solar panels in my neighborhood? **0 Households**

3. Estimate the number and percent of total homes in my neighborhood that have the best sun exposure *(Look for roofs on Google's Project Sunroof ranging from orange to white. Homes that don't have a lot of bright yellow may not be a great fit for documenting conditions, though they are often still viable for solar panels! For the purpose of this particular data, as we're using this tool, focus on the houses that provide data for you.*).

   5 Households (35.7%)

Identify your stakeholders

1. My PARENTS!
2. My neighbors
3. Friends of my parents
4. Rotary Club
5. Kiwanis Club (They support high school Key Clubs)
6. Chamber of Commerce
7. Local Homeowners Association (HOA)
8. My Neighborhood Association
9. People for Climate Action
10. City staff member
11. City council member

Describe the project and the steps taken to implement.

1. Define the parameters or boundaries of my neighborhood solar inventory.
   The 14 households between NE 65th Street and NE 63rd
2. Practice using Google's Project Sunroof to learn about the solar potential on my own house.
3. Use the same tool to estimate the solar potential of the rooftops in my neighborhood that have the best sun exposure.

4. On the Project Sunroof page for a certain building, if data is provided, you should have the option to change your monthly electric bill cost- ask your parents for an estimate of your monthly bill, and fill that in. Google will use this information to estimate potential savings, and to estimate if solar is right for you based on what you currently pay.

5. Create a chart of this data to see the totals.
   a. Total hours of usable sunlight per year (based on day-to-day analysis of weather patterns)
   b. Total square feet of roof top available for solar panels (based on 3D modeling of your roof and nearby trees)
   c. Typical energy use for certain size homes (research on Google, by location and square footage)
   d. Size of the needed solar installation in Kilowatts (KW)
   e. Percentage of energy use this size installation will cover.
   f. Estimated annual environmental impact of the recommended solar installation size.
      i. Metric tons of Carbon Dioxide saved
      ii. Number of passenger cars taken off the road
      iii. Number of trees seedlings grown for 10 years

6. Collect data such as potential savings as a whole and per house, as well as environmental benefits and costs ***Click Here to See Chart***

7. Prepare a final report.

8. Report to stakeholders, to encourage residential solarization in my neighborhood and across all neighborhoods in my city (speak with city councils to encourage information on city website)

Describe the audience you will present your work to. Identify the content and media you will use to communicate your project and its impact.

1. See the list of all stakeholders above
2. Other Sustainability Ambassadors to inspire replication
3. Create an infographic report
4. Post a series of short blogs chronicling my project
5. Post a series of short videos documenting my project
6. Repurpose my videos and blog posts through social media accounts of...
    a. Sustainability Ambassadors
    b. All relevant stakeholders who also have a social media presence

This is it! Document the impact your project had with evidence and data.

To be developed...

Develop a series of 5 short videos of your plan, process, and results. (1-3 minutes)

1. My plan and intended impact, relationship to community goals, stakeholders who need to know.
2. Here are the steps I plan to take, the resources I will need, experts I will consult.
3. The story of how I'm Implementing my plan, the steps, insights, obstacles.
4. Here is the result, my impact data, I did it! I learned a lot.
5. Here is the math story of projected, collective impact if others did what I did.

Reflect on your experience

1. Post a series of short blogs chronicling my project
2. Post a series of short videos documenting my project
3. Describe new insights, new stakeholder connections
4. What new skills did I learn?
5. How do I feel about the impact I achieved?
6. What is the mathematical amplification if lots more people did what I did?