O'NEILL

Going Solar in Gary, Indiana

Consumer Awareness Campaign

Team Members

Tom Agger,

Sarah Coletti,

Luke Fabina,

Molly Gearin,
Heather Perry,
Philip Woelmer

Instructor
Aaron Deslatte, Ph.D.

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Overview

As the solar power industry grows, there have been instances of predatory solar installation companies misleading and taking advantage of consumers when they try to retrofit their homes with solar panels. Consumers may often be misled by advertisements about non-existent stimulus programs relating to solar installation.[1] In states like Massachusetts, customers have filed hundreds of complaints to the state Attorney General's Office concerning predatory solar installation practices (Boston 25 News).

The City of Gary has set a course toward greater renewable energy use and reducing its greenhouse-gas emissions through the development of a climate-action plan (CAP).[2] This will require increased residential and commercial adoption of solar. While misinformation issues are pervasive in the solar industry, there is a lack of reliable and comprehensive resources available for consumers interested in solar adoption. The U.S. Department of Energy (DOE) provides valuable resources for vetting other sectors of the energy industry, such as the DOE Qualified Energy Service Companies List.[3] To be added to the list, companies must provide a detailed application including energy-saving measures, project performance indicators and timelines, and completion of a lengthy supplementary questionnaire. To date, there is no equivalent federal or state resource for vetting solar installation companies.

Some consumer resources are available to determine the average prices of solar installations and customer reviews of certain installers (Energy Sage, SEIA, Solar Power World Online and Solar Reviews). EnergySage is the most comprehensive of these websites, funded by the DOE.[4] Their data, while useful, is lacking, and most of the solar installation companies listed only have a couple of customer reviews. In general, this wide array of resources and information, often from unknown or disreputable sources, can be overwhelming and confusing for consumers.

Because of the lack of federal and state resources for consumers interested in installing solar panels on their homes, the burden of providing a comprehensive set of resources often falls on local governments. There are many positives to addressing this issue in a localized fashion, as local governments know best about the local interest in solar and the infrastructural and financial capabilities of their residents. The goal of this report is to aid the City of Gary in providing reliable, comprehensive, and relevant information to their residents about how to begin the solar installation process.

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[1] Insider. "'Predatory and Harmful': Misleading Solar Ads Touting 100% Free Panels and Fake Stimulus Programs Spread on Facebook as the Coronavirus Upends Door-to-door Sales." May 26, 2020. https://www.businessinsider.com/misleading-solar-ads-spread-coronavirus-upends-door-to-door-sales-2020-5

[2] Indiana University Environmental Resilience Institute News, March 9, 2020: https://news.iu.edu/stories/2020/03/iu/releases/09-indiana-cities-reduce-greenhouse-gases-resilience-cohort.html

[3] Federal Energy Management Program. DOE Qualified List of Energy Service Companies, January 20, 2022: https://www.energy.gov/eere/femp/articles/doe-qualified-list-energy-service-companies

[4] Energy Sage. "How Much Do Solar Panels Cost?" https://news.energysage.com/how-much-does-the-average-solar-panel-installation-cost-in-the-u-s/

Peer Comparison

Detroit, Michigan as a Case Study for Gary

Detroit, Michigan, was chosen as a case study city due to its considerable number of similarities to Gary, Indiana. While both cities are different in many regards, the demographic, geographic, and economic commonalities between the two made Detroit a well-grounded case study city for the issue of solar education. The city of Detroit has similar demographics to Gary according to the 2020 U.S. Census.[5] While the cities vary considerably in population size, they share similar histories as industry-heavy urban areas. After experiencing economic declines, they both have sought green and sustainable practices as avenues for repairing environmental, economic, and social damages to their communities.[6]

Detroit's Model for Educating Residents about Solar

The City of Detroit created an online Solar Toolkit resource to educate home, business, and school owners about solar installation. The non-profit Elevate Energy helped the City's Office of Sustainability develop this toolkit in part with Detroit Collaborative Design Center, Data Driven Detroit, EcoWorks, Great Lakes Environmental Law Center, Michigan Energy Options, and the National Renewables Energy Laboratory.[7]

There are several key resources available through the toolkit. One resource outlines the process for solar installation approval in Detroit. It is designed as a flow chart and includes expected timelines for steps in the approval process. The toolkit includes several educational resources: Solar 101, Benefits of Solar, and Solar FAQ. Solar 101 is a resource that explains how solar panels work specifically for residential applications and outlines important concepts like energy efficiency, net metering, and electrical grid in a glossary. Another resource describes how state and city policies could be changed to be more solar-friendly.

Detroit's Solar Toolkit also includes an online Solar Map that displays the solar potential for buildings and parcels. This is helpful information for a building or parcel owner to know and could potentially persuade owners to install solar panels. The map also includes layers depicting opportunity zones for solar installation, local historic districts, and national historic districts. The buildings and parcels can be filtered according to type: vacant, affordable housing project, brownfield, city-owned, city-owned school, demolition, and others. The toolkit provides general solar energy information, financial resources, the Detroit approval process for solar arrays, and GIS solar potential maps. The city of Gary lacks a single location where residents can go to learn information specific to its city. Adding a local verified vendor list or a consumer awareness resource to the Detroit Solar Toolkit model would be beneficial to the city of Gary.

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[5] Detroit City, Michigan: U.S. Census Bureau Quickfacts. U.S. Census Bureau, https://www.census.gov/quickfacts/fact/table/detroitcitymichigan/PST045219.
Gary, Indiana: U.S. Census Bureau Quickfacts." U.S. Census Bureau, https://www.census.gov/quickfacts/garycityindiana.

[6] Bird, Winifred. "Hard-Pressed Rust Belt Cities Go Green to Aid Urban Revival." Yale Environment360, https://e360.yale.edu/features/greening_rust_belt_cities_detroit_gary_indiana.

[7] City of Detroit, Office of Sustainability, Detroit Solar Toolkit, https://detroitmi.gov/departments/general-services-department/office-sustainability/detroit-solar-toolkit

Information Provision

While designing a similar online solar toolkit requires identifying new resources and partnerships, Gary can begin immediately providing information to build the knowledge capacity of its citizens. One pervasive perception of residential solar energy adoption is that it is too complicated and too expensive - but many resources exist to demystify and simplify the process. To that end, we have created a pamphlet for the City to use in education and resource-sharing, as well as a list of "Red Flags" to provide to homeowners.

Vetting Businesses

What is "vetting" a business? In the simplest terms, this is investigating a business to make sure it can deliver what it is advertising, and that the services are what a consumer is seeking. This can protect a homeowner from fraud or overcharge fees, or substandard products. While most businesses advertise products they can deliver, fraud is always present in any industry. The best strategy is to go in prepared with all the information citizens can gather.

Consumers are generally advised to comparison shop, conducting some research ahead of time into what products are available, and to receive consumer feedback on a business's performance. Shopping for solar panels should be no different, and there are a variety of ways a homeowner can protect themselves, their wallet, and their investments.

Even though solar panel installation remains an emerging industry, there are still ways of acquiring information about if a vendor is reliable and does good work. The Better Business Bureau can be used to search for accredited solar energy installation services in or near the City.[8] Sites like EnergySage allow solar consumers to compare vendors by Zip code.[9] In addition, watchdog legal organizations assist consumers in research into companies that provide goods or services. The City of Detroit's Toolkit provides several resources to help homeowners learn all they need to make an informed decision when converting their homes to solar energy.[10] For instance, its "Solar 101", page contains information on how to fund the transition to solar energy through grants, what permits might be required, what different types of solar panels, installations, and arrays might be good fits for a home, as well as technical specifications of how the system works. The pamphlet included in the Appendix provides more information.

Red Flags

Here are some red flags to watch out for when you are investigating solar panel providers.

- **It Sounds Too Good to Be True:** If it does, it probably is. A price that's too low for your estimates, or a "super good deal" on the most expensive kind of solar panel is probably not a viable choice.

[8] Better Business Bureau https://www.bbb.org/
[9] EnergySage https://www.energysage.com/
[10] https://detroitmi.gov/departments/general-services-department/office-sustainability/detroit-solar-toolkit

- **Incomplete or Unclear Information:** If the company does not have clear contact information or a customer service contact, it may be difficult to resolve any issues that might come up in an install.
- **They Do What, Again?:** There is no clear description of what the service includes, how long it might take, or what upkeep the company will be responsible for after the install is finished.
- **One-Stop Shopping:** The company lists many and very diverse services, including services that may require special equipment and/or training.
- **Always Best:** All the reviews are positive, or there are very few reviews. If this is a very new company, there should be some reviews online somewhere. Check your community's social media pages and see if anyone has been talking about this business.
- **You Need To Replace Your Roof:** Probably you don't. If you knew you had roof troubles before you contracted the vendor, then that's fine. But if your roof is sound and suddenly the vendor is telling you that you'll need to replace it entirely – get a second opinion!

At the end of the day, having a solid education about how a solar energy system works, how much it should cost to purchase and install, and what your home might need are the best guards against being taken advantage of.

Getting Started

Financial Options

The decision for residents to switch to solar energy can be beneficial for many reasons. Residents who make this switch can take advantage of lower monthly electric bills, added property value, lower maintenance, and reduced carbon footprint. However, even though this option provides these great benefits, many residents believe switching to solar energy costs too much money. For this reason, we sought to provide more information on financing options for Gary residents.

Loans. One of the most common financing options is through personal loans. Banks are the traditional option for providing these types of loans to residents that need help covering the initial cost of purchasing solar panels and the installation. The primary incentives from these loans are the allowance of tax credits and that they are generally set at a fixed monthly interest rate and monthly payment for the entire duration of the loan. Homeowners can get up to a 30% tax credit when using a loan to finance a solar energy system.[11] Two other significant benefits of personal loans are that they are fast to access the funds and unsecured, so there is no need to put the house up as collateral. However, a resident must have a good credit score to secure a low to moderate interest rate. Without a credit score above 600, the interest rate for the loan will be much higher and could end up being a barrier. For this reason, choosing to finance solar panel purchasing and installation using a bank-issued personal loan is best when the resident wants it done quickly and has a good credit score.

Another option is a home equity loan. This type of loan is similar to a personal loan offered by a bank, with fixed interest rates and a fixed repayment timeline. However, the significant difference is that

[11] U.S. Department of Energy, "Paying for Solar – Tips for Financing a Residential System." https://www.energy.gov/eere/articles/paying-solar-tips-financing-residential-system.

this loan allows residents to borrow against their home's equity. For this reason, this loan is an excellent option for residents that have a good amount of equity in their home coupled with a good credit score. This will allow residents to have low-interest rates, deduct the interest they pay and save money on taxes. Again, however, this loan is only a good option for residents with good credit and enough home equity to leverage it against.

The last loan option for residents is through the Fannie Mae Homestyle Energy Program.[12] This program provides residents with a mortgage option for clean energy upgrades such as switching to solar up to 15% of the as-completed appraised property value of the home. Additionally, this option allows residents purchasing a home to finance their solar panels through this financing. Furthermore, existing homeowners with a high-interest rate personal or PACE loans have the option to refinance them through this mortgage option for lower interest rates. There are several key benefits to this financing option. The first benefit is that property types can apply from manufactured homes to four-unit properties. The next is that this option provides as much as a 97% loan to value ratio, making it easier for residents to apply without great credit scores. However, an energy score report is required to prove that solar panels are cost-effective. To obtain the energy report, there are a couple of options. The first is to use a third-party energy rater, the second option is to use an accredited HERS rater, and the last is to use a third-party auditor permitted by the state or local program. Finally, to qualify for this financing option, the improvements made by switching to solar must have a lower cost than the present energy savings value over its lifetime. With this said, this is a great financing option for residents with low credit, new home buyers, or people that wish to refinance their current unsecured loans.[13]

Leases. The next type of financial option for residents is to use solar leases. These leases allow homeowners to rent solar panels for a monthly price. There is no up-front cost with this option upon agreeing to the terms, and the leases usually last 15 to 25 years. The main two methods of monthly payments are either a fixed price for the duration of the lease or an escalator form where the monthly quote increases over the lease term. One significant benefit of solar leases is that there is no required payment for installation or maintenance. Furthermore, any extra energy produced does not get billed to the homeowner. However, a few things residents should consider before using a solar lease is that they do not own the solar energy system, so obtaining tax credits isn't possible. The other consideration is that the resident will be tied into the lease for the agreed-upon time frame, so if the homeowner wants to sell the house before the lease expires, they must find someone to transfer the lease to, just like how a sub-lease works for renting an apartment.[14]

PPAs. The last financing option for residents is a power purchase agreement (PPA).[15] This form of financing is similar to a lease where the solar company still owns the solar energy system, and they also handle installation and maintenance. However, PPA differs by instead of charging a fixed monthly fee, residents pay a monthly quote based on the amount of energy being produced. This would be an excellent financing option for residents who own homes with considerable cloud cover, so they don't need to pay as high a monthly price as with a solar lease. Additionally, homeowners can take advantage

[12] Fannie Mae Homestyle Energy Mortgage. https://singlefamily.fanniemae.com/originating-underwriting/mortgage-products/homestyle-energy-mortgage
[13] U.S. Department of Energy, "Paying for Solar – Tips for Financing a Residential System." https://www.energy.gov/eere/articles/paying-solar-tips-financing-residential-system.
[14] Thoubboron, Kerry, et al. "Solar Leases vs. Solar Ppas: An Overview: Energysage." Solar News, 8 June 2021, https://news.energysage.com/solar-leases-vs-ppas/.
[15] "Solar Power Purchase Agreements." SEIA, https://www.seia.org/research-resources/solar-power-purchase-agreements.

of net metering benefits with a PPA. However, the same drawbacks apply to the PPA option compared to a solar lease. Since residents do not own the solar energy system, they cannot benefit from any tax credits. Additionally, residents are locked into long term agreements with a PPA, usually 20 years.[16]

Residents should also be aware of the financial incentives for using and installing solar energy systems, offered by federal, state, and local entities. On the federal level, residents can receive a Residential Renewable Energy Tax Credit. This tax credit is for any renewable energy system installed on a home, including solar panels, geothermal and wind energy systems. If a resident installs one of these systems before January, 1st 2023, they may receive up to a 26% tax credit. After this date, the max tax credit decreases slightly.[17]

Indiana law also includes some financial benefits for installing solar energy systems. For example, residents of Indiana are exempt from paying additional property tax for solar energy systems. This means that any added cost for solar panel systems is not added to the assessed value of your property when calculating property taxes. Indiana law also includes Solar Easement specifications. A Solar Easement is a property owner's legal right to direct sunlight for said owner's solar energy systems. In other words, a resident can obtain a Solar Easement agreement from neighbors guaranteeing that future built or grown structures will not interfere with access to direct sunlight.[18]

While there are no local tax or financial incentives specific to Gary that benefit owners of solar panels, Northern Indiana Public Service Company (NIPSCO), which is the local utility company in Gary, provides some important benefits to customers. NIPSCO has a Net-Metering Program, in which residents can gain any energy credits for any excess energy they generate and feedback into the local grid.[19] Under certain circumstances, customers can also benefit from the Feed-In Tariff program, which pays customers for any of the excess energy they generate.[20]

Solar Panel Installers for Gary Residents

Citizens of Gary may choose to install solar panels but do not know which installers they should contact for further information. Our group has vetted the following three solar panel installers. Each of these three recommended companies work with consumers to expand their knowledge on installing solar.

- **Tron Solar** was founded in 2018 and operates in the greater Chicago area. Tron Solar offers a free consultation to discuss the benefits of going solar, how solar panels work, net metering, understanding utility bills, incentives, property value increases, and more. The consultation covers energy usage and the savings the customer will have. Tron Solar offers custom designs and system monitoring which allows an inside look into the system's production through a live mobile app. Tron Solar has a sister company called Tron Restoration, specializing in residential, commercial roof

[16] "Solar Power Purchase Agreements." SEIA, https://www.seia.org/research-resources/solar-power-purchase-agreements.
[17] U.S. Department of Energy, Office of Energy Efficiency & Renewable Energy: https://www.energy.gov/eere/solar/homeowners-guide-federal-tax-credit-solar-photovoltaics#:~:text=The%20federal%20residential%20solar%20energy,solar%20photovoltaic%20(PV)%20system.&text=(Systems%20installed%20before%20December%2031,2024%20unless%20Congress%20renews%20it
[18] Ibid.
[19] NIPSCO Net Metering, https://www.nipsco.com/services/renewable-energy-programs/net-metering#:~:text=We%20install%20one%20meter%20capable,Please%20note%2C%20availability%20is%20limited.
[20] NIPSCO Feed-In Tariff, https://www.nipsco.com/services/renewable-energy-programs/feed-in-tariff

construction, windows, siding, and repair. The firm provides system repair, solar leak repair, panel snow cleaning, animal control, solar audits, and general maintenance.[21]

- **Powerhome Solar** is a company based in Mooresville, N.C., with service areas in 14 states. Their website has a tab that provides information on solar panels for homes. The information covers benefits such as reducing electric bills, owning power, protecting against power outages, and modernizing curb appeal. Additional information is provided on tax incentives and return on investment.[22]

- **Moxie Solar** was founded in 2008 in Iowa. Every Moxie Solar residential installed system comes with a 25-year warranty and a 5-star guarantee. Their website mentions that they are NABCEP certified, and they are an accredited A+ business by the Better Business Bureau. On their website, they have "economics of home solar," which has the costs of before going solar, which is $1,400 yearly electric cost, 3% annual cost increase, 0% incentive savings, and then after going solar $20,000+ lifetime savings, 0% rate increase, and $17,000 home value increase.[23]

Cost Saving for Gary Residents

The implementation of solar panels on individuals' housing units can provide opportunities for extensive savings to occur. Solar panel implementation on individual housing units can provide an extended benefit to the community overall. By taking the three solar panel distributors' average savings from converting to solar over 20 years, Gary homeowners could save on average $23,596 while paying back the upfront installation fee over 11 years with cash or loans available.

Next Steps

A Resource Residents Can Be Directed to for General Solar Energy Information

The U.S. Department of Energy website has a Homeowner's Guide to Going Solar.[24] Residents of Gary can be directed to this resource, helping them to educate themselves and connect with other resources. The website includes the science of solar energy, the environmental benefits, financing information, and more. Links give information specific to a resident's area and further educational material available for residents. Directing residents considering solar to resources like this will help them to learn more about solar energy and give them a single landing pad. Adding a link to this resource to the City of Gary's website can help to streamline the process of educating homeowners. While the pamphlet we created is concentrated primarily on the financial opportunities available and preventing homeowners from hiring unscrupulous solar contractors, resources like these can help to educate homeowners about other pertinent information a homeowner may need before choosing to pursue solar installation.

Create an Online Educational Resource for Gary

[21] Tron Solar, 2 Aug. 2021, https://tron.solar/.
[22] Powerhome Solar, Nov. 1 2021, https://www.powerhome.com/.
[23] Moxie Solar, Aug. 11, 2021, https://moxiesolar.com/residential-solar/.
[24] U.S. Department of Energy, https://www.energy.gov/eere/solar/homeowners-guide-going-solar

Gary residents would benefit from creating an online website that provides links and resources for residents and building owners to use. An educational resource such as the Detroit Solar Toolkit does not exist for the city of Gary. The website can be modeled after the Detroit Toolkit. Including a list of local verified vendors and consumer awareness information would be beneficial to Gary. The solution we created was a pamphlet, which is a condensed, consumer awareness-focused educational resource on solar panel installation in Gary. However, the City of Gary could create a page on their City website that residents can be directed to for Gary-specific information. Providing a single location for all of these resources for residents to access will simplify the process of learning about solar as a resident of Gary.

In developing this tool, Detroit released a Request for Proposals for a solar feasibility study. Elevate and the National Renewable Energy Laboratory (NREL) were the main partners, but several other organizations were involved as well. Elevate is a non-profit organization whose mission is to make sure everyone gets access to the clean energy economy. NREL contributed the data for individual building solar capacity and Elevate contributed to the graphics of the map. Elevate even has some experience working in Gary in 2015 to promote green job growth.

Make City Ordinances and Statutes Solar-Friendly

The Environmental Resilience Institute at Indiana University has created a Model Ordinance for Solar Installation.[25] As the City of Gary encourages residents to pursue solar installations, changing local ordinances that are prohibitive to solar panel installation will make solar adoption possible in more contexts.

Conclusion

The City of Gary is currently undergoing a transition to provide more energy through resident-owned solar panels. The Solar Installation Brochure developed for the City provides basic solar benefits, financial opportunities, the average cost for solar energy in Gary, local solar installers, red flags for solar installers, and resources to learn more. This pamphlet is one way to bridge the information gap in Gary that leaves residents vulnerable to predatory solar installers. Additionally, we provide recommendations for increasing the knowledge capacity of residents for financing solar and informing residents about the cost savings of installing solar. Since Gary does not have a webpage for residents, we recommend directing residents toward the U.S. Department of Energy's Homeowner's Guide to Going Solar when they have general questions. In the future, we recommend that the City create an online resource for all of Gary's solar information, modeled after the Detroit Solar Toolkit, and include local verified solar installers. In addition, as Gary continues to pursue renewable energy options, changes to city ordinances and statutes may be required to be solar-ready. We provided a resource of model solar ordinances created by the Environmental Resilience Institute.

[25] ERI Model Solar Ordinance, https://eri.iu.edu/documents/in-solar-ordinance-2020-december.pdf

Appendix

Considerations for Financing Options

Solar Loans:

Benefits
- Offered from various institutions
- Allows homeowners to receive tax credits
- Fixed monthly payments and reasonable interest rates

Drawbacks
- Responsible for installation and maintenance
- Need a good credit score to receive a solar loan with low-interest rates

Solar Leases:

Benefits
- Ability to rent solar panels with no upfront costs
- Not responsible for installation or maintenance

Drawbacks
- Can not obtain tax credits
- No standard payment plans across solar lease agreements
- Homeowners that sell their property before the lease ends are responsible for transferring the lease

Purchase Power Agreements (PPA):

Benefits
- Not responsible for installation or maintenance
- Monthly payments are based on the energy produced rather than fixed costs

Drawbacks
- Can not obtain tax credits
- If the solar system produces more energy than needed, homeowners are required to pay for the excess energy
- Responsible for transferring PPA if a homeowner decides to sell their house before term length ends

Federal, State and Local Incentives

Business Energy Investment Tax Credit (Federal): Up to 26% tax credit for businesses that invest in renewable energy systems (including solar)

Residential Renewable Energy Tax Credit (Federal): Up to 26% tax credit for households that invest in renewable energy systems (including solar)

Renewable Energy Property Tax Exemption (State): Spending on Solar energy heating or cooling systems is tax exempt

NIPSCO Incentives (Local): NIPSCO, the local utility company, offers Net Metering and Feed-In Programs, meaning residents can receive energy credits or in some cases financial payment for any excess electricity their solar energy systems feed back into the electrical grid

To learn more, visit dsireusa.org and enter your zip code, or visit nipsco.com

A Guide to Installing Solar Panels

In Gary, Indiana

Why Go Solar?

- Reduce monthly energy bill
- Has long-term financial benefits
- Increase property value
- Generate electricity from renewable sources
- Reduce negative environmental impacts from CO_2 emissions
- Become independent from energy utilities

Red Flags and Vendor Vetting for Solar Installation

- Investigate solar panel providers
- Know what your house would need, and a cost range

Red Flags:
- It Sounds Too Good To Be True
- Incomplete or Unclear Information about Services
- They Do what Again?
- One Stop Shopping
- Always Best Reviews
- You Don't Need To Replace Your Roof.

Average Cost in Gary

- The average solar panel cost in Gary, IN is $3.10/W.
- A solar panel system installed on average is the size of 5 kilowatts (kW). An average installation in Gary would range from $13,175 to $17,825.
- With the 26% Federal Investment Tax Credit and other solar incentives, the net price that someone would pay can decrease by thousands of dollars.
- The market average for the city of Gary is $15, 500 before the tax credit.

Additional Resources

For more educational resources about solar installation, the U.S. Department of Energy created a Homeowner's Guide to Going Solar available at energy.gov/eere/solar/homeowners-guide-going-solar.

Local Solar Installers

- Tron Solar
- Powerhome Solar
- Moxie Solar