Making it easy to go solar at a good price
Residential and Commercial

2019 SOLAR BASICS

FOR MORE INFO, VISIT
People used to believe we didn’t have wind in Indiana.

**Indiana has ample solar resources!**

**SOLAR INTENSITY MAP**

Indiana has more solar intensity than Germany. Yet, Indiana has only 0.3% of the solar PV in Germany. As of June 2014, according to the IOED, Indiana has about 93 MW of solar PV installed. According to WIKI, Germany has 36,708 megawatts as of June 2014, ahead of China and the U.S. [d States](https://en.wikipedia.org/wiki/States).
Solar increased in Indiana since net metering rule was expanded, economy improved, solar prices came down & Solarize Indiana promoted solar.

In 2011, Gov. Daniels expanded Net Metering to include all customer classes and systems up to 1 megawatt. This moved Indiana from a "D" to a "B" rating for Best Practices in Net Metering Policies.

Source: [www.sirensolar.org](http://www.sirensolar.org)

Solarize Indiana launched in June 2017 to promote solar after SB309 passed into law.
Solar protects against rising electricity rates...

After your system is paid off, electricity from the sun is free.
Solar Increases Property Values

- Lowering your home’s energy costs will improve its resale value. U.S. Department of Energy's Lawrence Berkeley National Laboratory: homes with solar typically sell faster and sell for $15,000 more than those without solar. The study included 22,000 homes in California, Connecticut, Florida, Massachusetts, Maryland, North Carolina, New York, and Pennsylvania. While the real estate market in central Indiana might differ, it’s reasonable to expect lower energy costs will increase the resale value.
- But no increase in property tax appraisal.
- NM is transferable.

- As your home's value is enhanced, it enhances the value of other homes in your association.

References:
2) Berkley Lab News Center http://newscenter.lbl.gov/2015/11/12/premium-for-solar-homes/
4) Appraisal Website https://www.pvvalue.com/
IRS Income Tax Credits

The Consolidated Appropriations Act, signed in December 2015, extended the expiration date for PV and solar thermal technologies, and introduced a gradual step down in the credit value for these technologies. A taxpayer may claim a credit of 30% of qualified expenditures for a system that serves a dwelling unit located in the United States that is owned and used as a residence by the taxpayer. Expenditures with respect to the equipment are treated as made when the installation is completed. If the installation is at a new home, the "placed in service" date is the date of occupancy by the homeowner. Expenditures include labor costs for on-site preparation, assembly or original system installation, and for piping or wiring to interconnect a system to the home. If the federal tax credit exceeds tax liability, the excess amount may be carried forward to the succeeding taxable year. The maximum allowable credit, equipment requirements and other details vary by technology, as outlined below.

- **30% for systems placed in service by 12/31/2019**
- **26% for systems placed in service after 12/31/2019 & before 01/01/2021**
- **22% for systems placed in service after 12/31/2021 & before 01/01/2022**
- The home served by the system does not have to be the taxpayer's principal residence.
Take advantage of Net Metering before phase out

SB309 Grandfathering Provisions…

<table>
<thead>
<tr>
<th>INSTALLATION</th>
<th>NET METERING</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018 – 2022</td>
<td>until 2032</td>
</tr>
<tr>
<td>After 2022</td>
<td>No Net Metering</td>
</tr>
</tbody>
</table>

When Net Metering ends…

Instead of getting the full Net Metering rate, ~12 cents per KWH, the utility would only credit you at wholesale+25%, ~4 cents per KWH.

This effectively shifts the economic benefit of free energy away from the free market (i.e. privately owned by homeowners, schools, churches, businesses and cities) and gives it to the monopoly utilities.
Go Solar    BE EMPOWERED

1. Be energy independent and self-sufficient
2. Save energy $$ and protect against increasing utility rates
3. Improve resale value of your property
4. Power your Electric Vehicle
5. Protect the environment
6. Protect the future for our kids and grandkids
7. Invest in your legacy to future generations
8. Care for God’s Creation
9. Not as expensive as you might think. Cost has come down 70% since 2009
10. Get 30% tax credit until Dec. 31, 2019
11. Get full net metering rate until 2032
12. ~7-10 yr payback, ~8% ROI,
13. Get support, benefits & group discount of Solarize campaign
14. Get $250 incentive first 10 HC homeowners to install solar. TBD
25 total Installations

- CARMEL 12
- NOBLESVILLE 4
- FISHERS 2
- WESTFIELD 2
- BEYOND 5

Average Roof Installation:  
27 PANELS 8 kW

Total installed:  
852 PANELS 245 kW

Together, these solar owners will save over $35,000 in energy costs every year, and will reduce their carbon footprint by more than 279 tons of CO2 every year. Less carbon pollution benefits everyone.
CARMEL
5.4 KW - 20 panels
7,438 KWH
CARAMEL
21 panels
FISHERS
5.4 KW - 18 panels
7,531 KWH -
WESTFIELD
15.6 KWp - 48 panels
20,410 KWH per year
Basic Components
Harvest free energy from the sun!!!

Modules:
- Watts
- Array sized to meet your Energy Usage
  \[20 \times 300 \text{ W} = 6000 \text{ W} = 6 \text{ kilowatts} = 6\text{KW}\]
  SYSTEM SIZE

Production/output depends on:
- Solar Irradiance
- Efficiency
- Orientation & Tilt
- Shading

Production measured in kilowatt-hours

7,800 KWH/yr

Your Energy Usage
10,000 KWH/yr

System Cost:
$15,000 = $2.5/watt
After 30% Tax Credit = $10,000
What is Net Metering?

Excess electricity is delivered to the local distribution grid. The utility sells it to your neighbor. The meter runs backward when you're producing more than you use. You get a credit.

Net Metering is a one-for-one exchange/credit of electricity, KWHs, effectively at the full retail rate.
Net Metering = Fair Credit for Solar Offset

Net metering provides fair credit for solar offset. The way you use energy doesn’t always match your solar production. Excess electricity produced during the daily and summer peaks is exchanged for electricity used in the evening/night and winter months. Excess electricity is credited back on your the next bill.

Production Follows the Sun

Your energy usage

Daily Solar Production

Monthly Solar Production
Duke Bill

<table>
<thead>
<tr>
<th>Meter Number</th>
<th>Reading From</th>
<th>Reading To</th>
<th>Days</th>
<th>Meter Reading Previous</th>
<th>Meter Reading Present</th>
<th>Usage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elec</td>
<td>Apr 10</td>
<td>May 08</td>
<td>28</td>
<td></td>
<td></td>
<td>148</td>
</tr>
</tbody>
</table>

**Electric - Residential**
- Usage: 148 kWh
- Duke Energy - Rate RSN0 $30.14
- Current Electric Charges $30.14
- Taxes $2.11
- Current Amount Due $32.25

Net Metering Applicable.

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If you produce more than you use in a given month, the “credit” carries over to your next bill.

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**Solar Installed**

**Annual Solar Production**

**KWH Usage**
# DUKE CASE STUDY

## How does SB309 effect Energy Cost Savings & Payback?

<table>
<thead>
<tr>
<th>Calculations based on</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Home Orientation</strong></td>
</tr>
<tr>
<td>Mostly West, -75 degrees</td>
</tr>
<tr>
<td><strong>Energy Usage</strong></td>
</tr>
<tr>
<td>Annual Usage, KWH</td>
</tr>
<tr>
<td><strong>Solar System</strong></td>
</tr>
<tr>
<td>System Size, kW</td>
</tr>
<tr>
<td>Estimated Annual</td>
</tr>
<tr>
<td>Production, KWH</td>
</tr>
<tr>
<td><strong>Costs</strong></td>
</tr>
<tr>
<td>Cost after Tax Credit, $</td>
</tr>
<tr>
<td><strong>Electricity Rate</strong></td>
</tr>
<tr>
<td>2016 Rate, $</td>
</tr>
<tr>
<td><strong>CO2 OFFSET</strong></td>
</tr>
<tr>
<td>Tons CO2/ year</td>
</tr>
</tbody>
</table>

**ASSUMPTIONS:**
- 50% to Grid
- Rate based on Purdue Forecasting Group projections until 2022, and then remains constant
- Based on Utility Averages, it is not Utility Specific
- Local taxes remain constant
- All Riders remain constant. Subtract Fixed Charges.

Actual savings & payback vary on a case-by-case basis.
DUKE CASE STUDY

Calculations based on

Home Orientation
Mostly West, -75 degrees

Energy Usage
Annual Usage, KWH 11,573

Solar System
System Size, kW 8.25
Estimated Annual Production, KWH 10,600

Costs
Cost after Tax Credit, $ 14,104

Electricity Rate
2016 Rate, $ 0.1133

CO2 OFFSET
Tons CO2/ year 10

ASSUMPTIONS:
• 50% to Grid
• Rate based on Purdue Forecasting Group projections until 2022, and then remains constant
• Based on Utility Averages, it is not Utility Specific
• Local taxes remain constant
• All Riders remain constant. Subtract Fixed Charges.

ENERGY COST SAVINGS & PAYBACK
Based on full Net Metering rate until it’s phased out to wholesale+25%

Payback in ~10 years
Wholesale+25%

Payback in ~ 16 years
Wholesale+25% begins 2032

Installed 2017
Installed 2018 - 2022
Installed after 2022
No Net Metering

BUY ALL – SELL ALL
Payback in ~ 36 years
Protect against wholesale rate with Batteries

Grid-Tied System

Reduce amount of solar going to the grid.

Store your solar energy.

Your Energy Usage

KWH
Use the Sun to Power your EV

Grid-Tied System

Solar Irradiance

Module

Breaker Panel

Inverter

AC

DC

Electric Vehicle

Charge on AC side

Your Energy Usage

KWH
STEP 1: HOAs

- Check with your HOA, Covenants, Rules and Regulations.
- Some have solar prohibitions.
- Some don’t but still have Architectural Review.
- Some are just starting to develop solar guidelines.

WE HAVE TOOLS TO HELP YOU

- Sample letters to help you approach your HOA
- Sample solar guidelines to assist HOAs

<table>
<thead>
<tr>
<th>2017</th>
<th>NEW SOLAR OWNERS</th>
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</thead>
<tbody>
<tr>
<td>NO HOA</td>
<td>52%</td>
</tr>
<tr>
<td>No Solar Restriction</td>
<td>33%</td>
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<tr>
<td>SOLAR PROHIBITION</td>
<td>10%</td>
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</table>
STEP 2: Get your Energy Usage

SAMPLE USAGE REPORT

<table>
<thead>
<tr>
<th>Read Date</th>
<th>Number of Days</th>
<th>KWH Usage</th>
<th>Net Amount</th>
<th>Local Tax</th>
<th>State Tax</th>
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<tbody>
<tr>
<td>06/09/15</td>
<td>32</td>
<td>631</td>
<td>99.99</td>
<td>7.00</td>
<td></td>
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<tr>
<td>07/09/15</td>
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<td>795</td>
<td>94.97</td>
<td>6.65</td>
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<tr>
<td>08/07/15</td>
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<td>1,450</td>
<td>153.08</td>
<td>10.72</td>
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<tr>
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<td>1,157</td>
<td>128.36</td>
<td>8.09</td>
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<td>956</td>
<td>107.84</td>
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<td>1,097</td>
<td>127.30</td>
<td>8.91</td>
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<tr>
<td>02/08/17</td>
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<td>7.48</td>
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<td>05/09/17</td>
<td>29</td>
<td>721</td>
<td>93.73</td>
<td>6.56</td>
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<tr>
<td>Totals</td>
<td>733</td>
<td>23,146</td>
<td>2,672.47</td>
<td>$187.08</td>
<td></td>
</tr>
</tbody>
</table>

• Check with your electric utility to get a history of your energy usage. You can also use a record of your bills. This tells you how big a system you need to cover your energy usage.

HOW TO GET YOUR ENERGY USAGE...
Call your electric utility and ask them to send you a 2-year history of your usage.
The report can be emailed to you.
Duke Customer Service 1-800-521-2232
Click here to see an example of a USAGE REPORT

Divide by 2 to get annual usage, KWH
Multiply by 1.9 to get annual carbon footprint, lbs of CO2
STEP 3: Submit your Energy Usage & Address

• Submit your **energy usage & address** to get:
  • preliminary design
  • cost estimate

• Your address allows the installer to get a satellite image of your property. This lets the installer know the **size** and **orientation** of your roof, and gives some idea about possible **shading** issues.

**HOW TO GET A SATELITE IMAGE...**
Go to Google Maps [https://www.google.com/maps/@39.9703794,-86.1762049,13z](https://www.google.com/maps/@39.9703794,-86.1762049,13z)
Type in your address
Select Satellite View
Zoom in to see your roof and trees, and possible shading issues.
STEP 4: Schedule a Site Visit

Schedule a **site visit** to get:
- final design
- quote

Solar Pathfinder
STEP 5: Select a Solar Installer

- When you’re ready to make a decision, select your installer and sign a contract.
- The installer will...
  - Complete required drawings
  - Assist with zoning and permits
  - Assist with the interconnection application with your utility. This will require you to send the installer
    - A copy of your utility bill
    - A copy of your property insurance
To get follow-up email & join the solar co-op group discount...

Be sure to sign up

1. Go to carmelgreen.org
2. Click on SOLARIZE HAMILTON COUNTY
3. Then click on SIGN UP
THANK YOU!

FOR MORE INFO, VISIT