# State Investment in Solar Energy

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# Introduction

With the steady rise of solar energy technology and the growing movement towards finding alternatives to fossil fuels, it is easy to see the direction in which solar energy is heading. In the short time that solar energy has been available we have seen dramatic increases in solar energy output: not only commercial but residential as well. We have seen prices drop more than 30% and jobs created in multiple sectors. With the scientific community support, it is clear that the major obstacle to overcome is gaining the support of the general population; moreover, the support of state and federal government. It is our goal to show what current investment has brought the United States and what future investment may lead to.

# Data

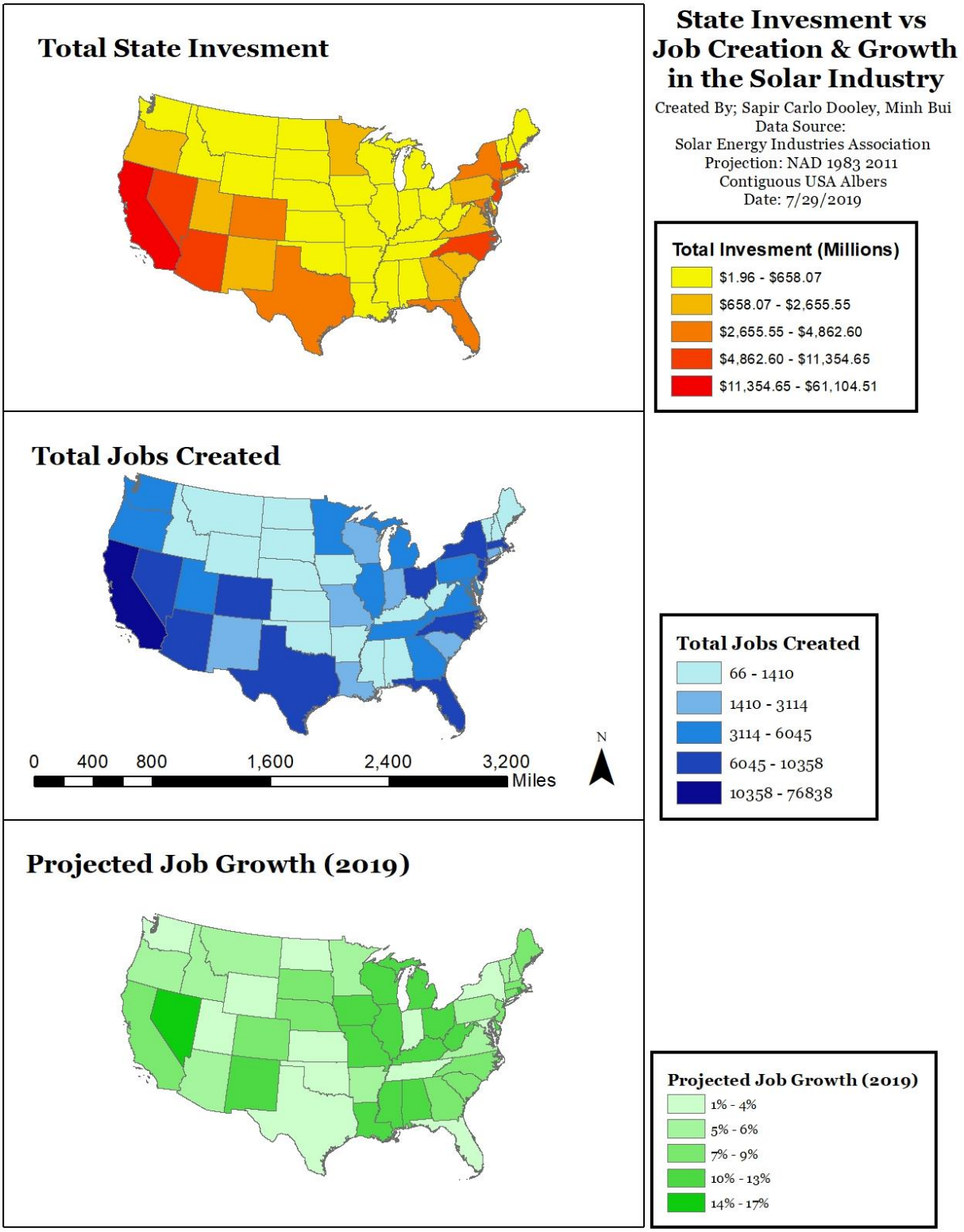
| State | % Job Growth | Total Investment | Jobs Created |
|---|---|---|---|
| Washington | 4 | 573680000 | 4045 |
| Virginia | 5 | 1030030000 | 3890 |
| Delaware | 12 | 407850000 | 1007 |
| District of Columbia | 7 | 185820000 | 1092 |
| Wisconsin | 10 | 196900000 | 3007 |
| West Virginia | 12 | 29640000 | 341 |
| Hawaii | 4 | 3045670000 | 2120 |
| Florida | 4 | 4862600000 | 10358 |
| Wyoming | 3 | 112580000 | 190 |
| New Hampshire | 5 | 243590000 | 890 |
| New Jersey | 9 | 9363120000 | 6410 |
| New Mexico | 11 | 1770690000 | 2168 |
| Texas | 4 | 4634510000 | 9612 |
| Louisiana | 10 | 332170000 | 2950 |
| North Carolina | 8 | 7997580000 | 6719 |
| North Dakota | 3 | 1960000 | 233 |
| Nebraska | 9 | 65460000 | 1328 |
| Tennessee | 3 | 658070000 | 4690 |
| New York | 3 | 4861790000 | 9729 |
| Pennsylvania | 6 | 1684690000 | 4219 |
| Rhode Island | 17 | 242690000 | 1007 |
| Nevada | 16 | 6744810000 | 6680 |
| Puerto Rico | 12 | <Null> | <Null> |
| Colorado | 8 | 3259260000 | 6847 |
| Alaska | 7 | 10970000 | 66 |
| Alabama | 11 | 338550000 | 614 |
| Arkansas | 6 | 185270000 | 369 |
| Vermont | 5 | 604420000 | 1229 |

| | | | |
|---|---|---|---|
| Illinois | 11 | 340680000 | 4879 |
| Georgia | 7 | 2211160000 | 3696 |
| Indiana | 3 | 573820000 | 3114 |
| Iowa | 11 | 204060000 | 844 |
| Massachusetts | 7 | 6515050000 | 10210 |
| Arizona | 6 | 11354650000 | 7524 |
| California | 7 | 61104510000 | 76838 |
| Idaho | 6 | 631450000 | 557 |
| Connecticut | 8 | 1642890000 | 2193 |
| Maine | 8 | 166880000 | 635 |
| Maryland | 4 | 3057890000 | 4515 |
| Oklahoma | 1 | 50710000 | 838 |
| Ohio | 11 | 608140000 | 7162 |
| Utah | 4 | 2655550000 | 6045 |
| Missouri | 10 | 572780000 | 2819 |
| Minnesota | 6 | 1719300000 | 4602 |
| Michigan | 13 | 283210000 | 4196 |
| Kansas | 3 | 69400000 | 896 |
| Montana | 5 | 84010000 | 274 |
| Mississippi | 10 | 274820000 | 770 |
| South Carolina | 8 | 1229770000 | 2983 |
| Kentucky | 10 | 76150000 | 1410 |
| Oregon | 6 | 1145780000 | 3658 |
| South Dakota | 9 | 3070000 | 444 |

# Methods

1. All data available from the Solar Energy Industries Association and The Solar Foundation was scoured for relevant economic information.
2. Information on total state investment in solar energy, total number of jobs created in the industry, and projected job growth in 2019 was selected.
3. Data was aggregated and compiled into one table using Microsoft Excel.
4. Current State Tiger Shapefiles were located and attribute tables were cleared of irrelevant information.
5. Table was joined to shapefiles based on state name.
6. Data was symbolized using choropleths.

# Map


Total State Invesment
Total Jobs Created
0 400 800 1,600 2,400 3,200
Miles
N
Projected Job Growth (2019)
State Invesment vs Job Creation & Growth in the Solar Industry
Created By; Sapir Carlo Dooley, Minh Bui
Data Source:
Solar Energy Industries Association
Projection: NAD 1983 2011 Contiguous USA Albers
Date: 7/29/2019
Total Invesment (Millions)
$1.96 - $658.07
$658.07 - $2,655.55
$2,655.55 - $4,862.60
$4,862.60 - $11,354.65
$11,354.65 - $61,104.51
Total Jobs Created
66 - 1410
1410 - 3114
3114 - 6045
6045 - 10358
10358 - 76838
Projected Job Growth (2019)
1% - 4%
5% - 6%
7% - 9%
10% - 13%
14% - 17%

# Analysis

Across the United States, state investment ranges from 1.96 million in Wisconsin, to 61 billion in California. This investment has led to the creation of 3,007 and 76,868 jobs respectively. In all states where investment lay in the 4$^{th}$ and 5$^{th}$ quantile (4.86 to 61 billion); including California, Nevada, and Texas, job creation matched at 6,045 to 76,838. State investment has been limited to the southwest and eastern seaboard. This is likely due to the high productivity of solar power in these states. It is clear in map three however, that job growth is not limited to those areas. In 2019 alone, it is predicted that states such as Kentucky, West Virginia, and Iowa will see job growth within the 5$^{th}$ quantile (14% - 17%). However, each of these states has only seen investment within the 1.96 to 658 million range.

In order to reach a place where the United States can run solely or mostly on renewables it is necessary that we move towards sources such as solar energy. It is clear that state investment directly relates to job creation; however it is not the only driving factor. Even with such low investment, states near the great lakes and southeastern United States are poised to see the highest growth. More state investment can only expedite this growth to a rate that can pull us out of the ecological mess we have gotten ourselves into.