

2016

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Recommended Citation

Kevin Armonio, *Securing California's Solar Future: Strategies to Mitigate the Effects of the U.S.-Chinese Solar Trade Dispute on California's New Renewable Energy Goals*, 22 *Hastings West Northwest J. of Env'tl. L. & Pol'y* 109 (2016)
Available at: https://repository.uchastings.edu/hastings_environmental_law_journal/vol22/iss1/8

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Securing California's Solar Future: Strategies to Mitigate the Effects of the U.S.-Chinese Solar Trade Dispute on California's New Renewable Energy Goals

*Kevin Armonio**

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I. Introduction

The ongoing trade conflict between the U.S. and China over Chinese-made solar panels could have serious ramifications on the future of solar energy and energy policy, especially here in California. In recent years, California has become a leader in innovative energy policies. California has retrenched their commitment to renewable energy and is planning the most ambitious renewable energy plan in America. There is a fundamental tension between the goals of the U.S. and the goals of California. On the one hand, America must look to protect American industries and American workers from the ill effects of artificially priced Chinese solar panels. However, on the other hand the availability of cheap solar energy will be an important component in California meeting its ambitious renewable energy targets.

This note gives a general overview of the global solar panel conflict in relation to U.S. and California energy policies, discusses the various issues

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with the U.S. government's current response, and provides Federal and California policy proposals to ensure that California can meet its renewable energy targets. First, this note provides an overview of why solar energy is a desirable alternative energy source. Second, this note discusses what caused the solar panel conflict between the U.S. and China. Third, this discusses the U.S.'s response to the solar panel conflict and it's inadequate. Fourth, this note discusses the impact that the U.S.'s solar panel response could have on California energy policies. Fifth, this note outlines policy proposals that the U.S. can undertake to end the solar panel trade conflict with China. These policy proposals include a bilateral agreement between the U.S. and China, increased use of the World Trade Organization dispute resolution process, and conclusion of the Trans Pacific Partnership. Finally, this note outlines policy proposals that both the federal Government and California can undertake in order to help ensure that California is able to meet its ambitious renewable energy goals. At the federal level these policy proposals include continued federal subsidies for solar energy, renewal of expired tax credit programs, direct grant programs, loan and loan guarantee programs, and research development programs. At the state level these policy proposals include incentive programs and tax credit programs.

II. An Overview of Solar Energy

As the effects of global climate change become more widespread and apparent, a move away from traditional sources of energy, like oil and coal, is becoming the norm. Renewable energies are becoming more commonplace and, as will be discussed below, are important aspects of California's energy policies. Solar energy in particular is a very recognizable renewable energy source, and is an important part of the overall strategies to combat global climate change.

There are several reasons why solar energy is an attractive option as an energy source. First, solar energy is the most abundant energy source on the planet.¹ Around 173,000 terawatts of solar energy continuously hits Earth; that is roughly 10,000 times the world's total energy use.² The second, and one of the most important reasons that solar energy is desirable, is that it generates electricity without producing greenhouse gas emissions or other forms of air pollution.³ For each kilowatt of "solar electric generating capacity, the pollution avoided by not using fossil

1. Erin Pierce, *Top 6 Things You Didn't Know About Solar Energy* (June 22, 2012), <http://energy.gov/articles/top-6-things-you-didnt-know-about-solar-energy>.

2. *Id.*

3. David Anderson, *Solar Energy Benefits & Drawbacks*, S.F. GATE, <http://homeguides.sfgate.com/solar-energy-benefits-drawbacks-79613.html> (last visited Oct. 29, 2015)

fuels . . . amounts to . . . between 600 and 2,300 kilograms of carbon dioxide per year.”⁴ A home with a 2.5 kilowatt rooftop solar electric system offsets enough carbon dioxide “to equal that emitted by a typical family car during that same year.”⁵ Solar energy’s impressive ability to provide electricity without the devastating effects of carbon emissions makes apparent why improving current conditions for the solar industry is vital to combating climate change, and as discussed below, especially in California.

III. Genesis of the U.S.-Chinese Solar Panel Trade Conflict

One of the biggest issues with the consistency and availability of solar energy is the ongoing trade conflict with China. This trade conflict centers around Chinese-made solar panels. In order to support their own solar panel industry, over the last few years China has heavily subsidized Chinese solar panel companies.⁶ As a result, the Chinese have been able to produce massive amounts of solar panels, driving prices down.⁷ According to some reports, cheap Chinese solar panel prices have gone down two-thirds since 2010.⁸ The U.S. (and the European Union) accused the Chinese government of violating international trade law by “dumping” solar panels on the market.⁹

“Dumping” is essentially when an actor sells a product on the open market below fair market rates in order to undercut prices and increase market share.¹⁰ The U.S. claims that as a result of illegal Chinese “dumping” American solar companies are being hurt and some are even going out of business.¹¹ The well-documented failure of Solyndra, for example, resulted from Solyndra being unable to develop a viable business model around their solar panel technology resulting less sophisticated and cheaper Chinese solar panels flooding the market.¹²

4. Better Building Series, “Myths about Solar Electricity” (January 2003).

5. *Id.*

6. Jeffery Ball, *The Next Battle in Our Trade War With China* (Jan. 21, 2014), <http://www.newrepublic.com/article/116286/solar-panel-trade-war-china>.

7. Keith Bradsher, *For Solar Panel Industry, A Volley of Trade Cases* (October 11, 2012), http://www.nytimes.com/2012/10/12/business/global/us-places-tariffs-on-imports-of-chinese-solar-panels.html?pagewanted=all&_r=0.

8. Cassandra Sweet, *Tariffs Boost Solar-Panel Makers in US* (July 25, 2014), <http://online.wsj.com/articles/tariffs-boost-solar-panel-makers-in-u-s-1406329365>.

9. Ball, *supra* note 6.

10. *Id.*

11. *Id.*

12. *Id.*

As a result of the accusations, the U.S. faces increased pressure to take action and protect American businesses. This pressure culminated in the 2011 *Solarworld* Case. On October 19, 2011, Solar World Industries America filed a petition with the U.S. International Trade Commission (“ITC”) for a preliminary antidumping duty determination regarding crystalline silicon photovoltaic (“CSPV”) cells and modules from China.¹³ The parties opposing the petition included The Chinese Chamber of Commerce for Import and Export Machinery and Electronic Products; Sun Edition LLC, a U.S. purchaser of CSPV cells and modules; SunTech Power Holdings, a Chinese producer of CSPV cells; Trina Solar, Inc., a U.S. distributor of photovoltaic (“PV”) products; and Solar Solutions, Inc., a U.S. distributor of PV products.¹⁴

The ITC first had to determine what kind of solar cells were part of the domestic products being affected by the Chinese solar cells. The ITC had to determine whether thin-film PV cells should be included in the definition of a domestic product like CSPV cells and modules.¹⁵ The ITC ultimately determined that thin-film products were would not be included in the analysis because they were not similar enough to CSPV cells and modules.¹⁶

Next, the ITC had to determine whether the domestic products of American CSPV producers made up a major portion of the total domestic production of solar products. The ITC determined that the domestic products of American CSPV producers made up a major portion of the total domestic production of solar products, and defined the domestic industry as all U.S. producers of CSPV cells and modules.¹⁷ The ITC concluded that there is “a causal nexus between the subject imports and the declines in the condition of the domestic industry and thus demonstrates a reasonable indication of material injury by reason of subject imports.”¹⁸ The ITC is required to impose tariffs on the subject import upon making an affirmative determination.¹⁹

The ITC, during antidumping and countervailing duty investigations, determines whether “there is a reasonable indication that that an industry in the U.S. is materially injured or threatened with material injury” by the

13. *Crystalline Silicon Photovoltaic Cells and Modules from China*, U.S. International Trade Commission, December 2011 at 3 [hereinafter *Solarworld*].

14. *Id.*

15. *Id.* at 11-12.

16. *Id.*

17. *Id.* at 17.

18. *Id.* at 30.

19. 19 U.S.C. §§ 1671(e), 1673e(a).

subject imports.²⁰ In making this determination the ITC examines “the facts of record that relate to the significance of the volume and price effects of the subject imports and any impact of those imports on the condition of the domestic industry.”²¹ Ultimately, after their investigation, the ITC determined that the domestic industry was materially injured by the subject imports, but not to the point that retroactive tariffs were necessary.²²

As a result of the ITC’s findings, the U.S. instituted anti-dumping tariffs to combat the low prices of Chinese solar panels.²³ An anti-dumping tariff is a duty placed on a suspiciously low-priced import.²⁴ This type of duty increases the price of the import in order to protect local markets from unfair competition.²⁵ The U.S. anti-dumping tariffs imposed duties of between nineteen percent and thirty-five percent.²⁶

IV. International Free Trade and Other Arguments Against Trade Tariffs

The purpose of anti-dumping tariffs is to protect local producers, in this situation, American solar panel producers. However, there are several reasons why tariffs are not an appropriate response to resolve the on-going conflict between the U.S. and China. First, tariffs are an impediment to international free trade. Second, tariffs are ineffective. And third, cheap Chinese solar panels are a good thing for the American and Californian solar panel market.

The first reason tariffs are not the ideal method of addressing this problem is because they impede free trade. International trade has helped fuel economic growth in the developed world over the last few decades.²⁷ In recent years trade advocates have advocated for more liberal free trade, the idea being that trade should have few barriers.²⁸ These advocates argue that liberal free trade enhances geopolitical stability, promotes the efficient use

20. Solarworld, *supra* note 13 at 17 (citing 19 U.S.C. §§ 1671(b), 1673b(a)).

21. *Id.* at 17.

22. *Id.* at 30.

23. Diane Cardwell, U.S. *Imposes Steep Tariffs on Importers of Chinese Solar Panels* (June 3, 2014), <http://www.nytimes.com/2014/06/04/business/energy-environment/us-imposing-duties-on-some-chinese-solar-panels.html>.

24. BusinessDictionary.com, <http://www.businessdictionary.com/definition/anti-dumping-duty.html>.

25. *Id.*

26. Sweet, *supra* note 8.

27. David Hunter, James Salzman, and Durwood Zaelke, *INTERNATIONAL ENVIRONMENTAL LAW AND POLICY* (2011) at 1193.

28. *Id.*

of the world's scarce resources and trade enhances communication and sharing of knowledge and technology.²⁹

Liberal free trade enhances geopolitical stability by making countries like the U.S. and China economically interdependent.³⁰ Countries that are economically interdependent are less likely to resolve conflicts through armed conflict.³¹ Liberal trade promotes the efficient use of scarce resources because it encourages nations to specialize the production of goods and services, ensuring that goods and services are produced efficiently.³² And liberal trade increases commercial transactions among different nations and theoretically stimulates the sharing of ideas, which should then stimulate technological developments.³³ The promotion of liberal free trade allows all these positive things to occur.

However, trade tariffs impede free trade because they distort the free market. While protecting domestic solar panel producers is a noble idea it shouldn't come at the expensive of free trade's positive benefits. Because trade tariffs would impede all the positive aspects of liberal free trade they are not appropriate.

The second reason that the U.S. anti-dumping tariffs are not a desirable way to resolve the solar panel conflict is because they are ineffective. First, trade tariffs are ineffective because the Chinese have previously found loopholes around the tariffs. In 2012, in order to combat the increase in Chinese solar panels the U.S. placed tariffs on imported panels made from Chinese solar cells.³⁴ Chinese companies were able to find a loophole by assembling panels with solar cells produced in other countries, like Taiwan.³⁵ This loophole allowed Chinese companies to keep exporting solar panels without being subject to American trade tariffs.³⁶

Second, trade tariffs are ineffective because the Chinese government has retaliated with their own tariffs. A key component of producing solar panels is a material called polysilicon.³⁷ The U.S. is a large producer and exporter of polysilicon.³⁸ In response to the U.S.' tariffs on solar panels the Chinese government placed tariffs on U.S. polysilicon.³⁹ In other words, the

29. *Id.*

30. *Id.* at 1194.

31. *Id.*

32. *Id.*

33. *Id.*

34. Cardwell, *supra* note 23.

35. *Id.*

36. *Id.*

37. *Id.*

38. *Id.*

39. *Id.*

U.S.'s decision to place tariffs on Chinese solar panels backfired. Meaning, not only are the tariffs on Chinese solar panels essentially ineffective but also the Chinese have retaliated with their own tariffs. The purpose of the trade tariffs is to protect American solar panel companies. While they have helped American solar panel companies⁴⁰ it has come at the expense of polysilicon producers.

The third reason that trade tariffs are not the most effective way to resolve the conflict between the U.S. and China is because low solar panel prices are good for many in the American solar panel market. While low-priced Chinese solar panels are hurting American solar panels companies, they are also a boon to another important aspect of the solar industry: solar providers, solar installers, and consumers.

The demand for solar energy has increased over the last several years to the point that the U.S. has become the third largest market for solar energy.⁴¹ The annual installation of solar energy systems has increased in the U.S. from 1.265 gigawatts in 2008 to 4.75 gigawatts in 2013.⁴² With demand booming it is important for domestic solar energy installers to have access to cheap solar panels in order to keep their own rates low. As discussed in more detail below, this is increasingly important states like California, which are trying to increase their renewable energy portfolio and solar energy in an important part of a balanced renewable energy plan.

V. International Aversion to Trade Tariffs

Before delving into the possible solutions to resolve the solar trade conflict between the U.S. and China it is important to discuss other international players that are dealing with the issue of Chinese-made solar panels as well, specifically the European Union and India. The purpose of this section is to demonstrate that this conflict is not an isolated U.S.-Chinese problem and further demonstrate that trade tariffs are not an appropriate solution.

Like the U.S., the EU had problems with Chinese-made solar panels hurting European companies.⁴³ The EU claimed that low price Chinese solar panels could result in cutting 25,000 solar industry jobs in Europe.⁴⁴ And

40. Sweet, *supra* note 8.

41. Daniel Gross, *US solar industry: Lots of energy, not many panels* (Aug. 14, 2014), http://www.slate.com/articles/business/the_juice/2014/08/u_s_solar_industry_lots_of_energy_not_many_panels.html.

42. *Id.*

43. Ball, *supra* note 6.

44. Ian Traynor and Jennifer Rankin, *EU to impose anti-dumping tariffs on Chinese solar panels* GUARDIAN (June 4, 2013), <http://www.theguardian.com/business/2013/jun/04/eu-tariffs-dumping-china-solar-panels>.

like the U.S., the EU tried to resolve these issues through trade tariffs.⁴⁵ However, unlike the U.S., the EU and China came to a compromise.⁴⁶ Under an agreement between the EU and China, Chinese solar panel companies agreed to a price floor and specific volume ceiling.⁴⁷ This deal is not a permanent fix since the settlement will only run through 2015.⁴⁸ However, this illustrates that a compromise can be struck with China. The EU probably recognized that tariffs on Chinese-made solar panels would result in conflict and trade retaliation from China.⁴⁹ This furthers the idea that trade tariffs are not the best solution for resolving this trade dispute with China.

The other country dealing with cheap Chinese-made solar panels is India. India is one of the fastest developing countries in the world and as a consequence, they use tremendous amounts of energy.⁵⁰ India's Prime Minister, Narendra Modi is making a push to increase the amount of renewable energy, particularly solar energy, which India produces.⁵¹ Because of cheap Chinese solar panels, India mulled anti-dumping tariffs to protect Indian solar companies.⁵² India's Finance Ministry ultimately decided not to pursue anti-dumping tariffs because domestic producers would not be able to meet the demand of India's ambitious solar energy goals.⁵³

This example further demonstrates that trade tariffs do not need to be established. The U.S. like India is increasing its demand for solar energy. India is choosing to protect consumers and increase their renewable energy supply rather than protect domestic solar panel producers. This balancing of values is an approach that the U.S. can take.

VI. Trade Tariffs Could Impede California's Energy Policies

As discussed briefly in above sections, one of the principle reasons that the U.S. should not use trade tariffs against Chinese-made solar panels

45. *Id.*

46. Ball, *supra* note 6.

47. *Id.*

48. *Id.*

49. Traynor and Rankin, *supra* note 44.

50. Damian Carrington, *Can Narendra Modi bring the solar power revolution to India?* GUARDIAN (Sept. 30, 2014), <http://www.theguardian.com/environment/2014/sep/30/-sp-narendra-modi-india-solar-renewables-energy>.

51. *Id.*

52. *India Not to Impose Anti-dumping Duty on Solar Panels: Nirmala* HINDU (Sept. 11, 2014), <http://www.thehindu.com/business/Economy/india-not-to-impose-antidumping-duty-on-solar-panels-nirmala/article6397475.ece>.

53. *Id.*

is that cheap solar panels are an important part of the solar installation industry. This is especially true in California, which has one of the most ambitious renewable energy plans in the U.S.

Under the California Global Warming Solutions Act of 2006, better known as AB32, California established a comprehensive blueprint for tackling the issue of climate change in the state.⁵⁴ These measures and strategies were released as part of the initial Scoping Plan, and California became the first state in the U.S. to have a comprehensive set of greenhouse gas emission reduction strategies that involved every sector of the economy.⁵⁵ Part of that initial Scoping Plan was a target to increase the amount electricity generated from renewable sources to at least thirty-three percent of California's electricity by the year 2020.⁵⁶

The initial Scoping Plan acknowledged that solar energy would be a component of increasing California's renewables portfolio standard ("RPS"), the amount of California's electricity that comes from renewable energy.⁵⁷ The initial Scoping Plan specifically discussed Governor Schwarzenegger's Million Solar Roofs Program.⁵⁸ The Program called for a goal of installing 3,000 megawatts of new solar capacity by 2017.⁵⁹ When the initial Scoping Plan was released these seemed like ambitious targets, especially related to the solar power.

Then in 2011, Governor Brown signed a bill putting the recommendation of the initial scoping plan into force.⁶⁰ The RPS program required California's "investor-owned and publicly owned electric utilities, as well as other retail sellers of electricity" to provide thirty-three percent of their retail electricity with renewable energy by 2020.⁶¹ And as part of Governor Brown's Clean Energy Jobs Plan, the Governor set aggressive targets of adding 8,000 megawatts of centralized, large renewable facilities, with 3,900 megawatts online as of May 2014.⁶² In addition, the Clean Energy Jobs Plan also set targets for 12,000 megawatts of "distributed renewable generation by 2020," and as of May 2014 4,400 megawatts have already come online.⁶³

54. First Update to the Climate Change Scoping Plan, page 2 (May 2014).

55. *Id.* at 4.

56. *Climate Change Scoping Plan* ES-3 (December 2008)

57. *Id.* at 44-45.

58. *Id.* at 53.

59. *Id.*

60. *First Update to the Climate Change Scoping Plan* 40 (May 2014).

61. *Id.*

62. *Id.*

63. *Id.*

In 2013, California added over 2,600 megawatts of solar energy, including 300 megawatts in self-generation photovoltaic (“PV”).⁶⁴ Solar PV programs are driving the self-generation installation in California.⁶⁵ In 2006, Senate Bill 1 (“SB 1”), set a target for 3,000 megawatts of self-generation solar energy by 2017, and as of May 2014, 1,570 megawatts have been installed.⁶⁶ Meeting the goals of AB32 has increased the need for solar panels and solar energy.

California is currently on a pace to easily meet the thirty-three percent RPS targets laid out by Governor Brown in 2011.⁶⁷ Southern California Edison purchased 21.6 percent of its retail energy from renewables in 2013, Pacific Gas & Electric purchased 23.8 percent of retail energy from renewables, and San Diego Gas & Electric purchased 23.6 percent of its retail energy from renewables.⁶⁸ And based on contracts that PG&E and SDG&E have already signed, their renewable retail electricity purchases will hit 31.3 percent and 38.8 percent, respectively, by 2020.⁶⁹

The success in meeting the thirty-three percent RPS targets motivated Governor Brown to proposed raising the target RPS from thirty-three percent to fifty percent by 2030 in his 2015 inaugural address.⁷⁰ Experts believe that raising the target from thirty-three percent to fifty percent will stimulate the renewable energy market.⁷¹ Since the state’s major utilities are on pace to meet their thirty-three percent goals by 2020, there hasn’t been as much pressure to add more clean power to the grid.⁷² This previous lack of pressure led to a slowdown in the development of solar projects in California.⁷³ For example, in Riverside County, half a dozen large-scale solar projects have stalled for months or years, and their developers dropped

64. *Id.*

65. *Id.*

66. *Id.*

67. Julie Cart, *Gov. Brown’s Renewable Energy Plan Could Boost Solar, Wind Industries*, L.A. TIMES (Jan. 7, 2015), <http://www.latimes.com/local/california/la-me-renewable-goals-20150108-story.html>.

68. Sammy Roth, *Experts: Brown’s Support Bodes Well for Green Mandate*, DESERT SUN (Jan. 10, 2015), <http://www.desertsun.com/story/news/2015/01/09/brown-calls-percent-renewable-mandate/21514667/>.

69. *Id.*

70. *Id.*

71. *Id.*

72. *Id.*

73. Sammy Roth, *Solar Slowdown: Stalled Projects dot Desert Landscape*, THE DESERT SUN (Aug. 24, 2014), <http://www.desertsun.com/story/tech/science/energy/2014/08/24/stalled-solar-projects-desert-landscape/14522553/>.

other projects all together.⁷⁴ The Governor's new goal of fifty percent renewables will increase the pressure and reverse the slowdown of solar projects in California.

The California Legislature has followed Governor Brown's lead with a series of legislative proposals aimed at achieving the Governor's proposals. One of the proposals is SB 350 which calls for "a 50 percent reduction in petroleum use in cars and trucks, a 50 percent increase in energy efficiency in buildings, and a goal of 50 percent of state utilities' power coming from renewable energy, all by 2030."⁷⁵ This essentially patterns the goals that were laid out by Governor Brown in his inaugural address of January 2015.

With Governor Brown's even more ambitious renewable energy goals for California the need for cheap solar panels is readily apparent. In order for California to meet these goals, the U.S.-China solar panel trade conflict will need to be resolved. Continued use of trade tariffs could increase the price of solar panels in California and make California's renewable energy goals more costly.

VII. Resolving the U.S.-China Solar Trade Conflict through Bilateral Agreement

As demonstrated above, tariffs are not the best way to resolve the solar trade conflict between the U.S. and China. And finding some kind of resolution to the solar trade conflict will be an essential part of California meeting its renewable energy goals. There are different possible solutions to resolving the issue at the federal level. One option would be for the U.S. to allow domestic solar panel industries to fail and get out of the business of solar panel production altogether. A second option would be some kind of bilateral trade agreement between the U.S. and China. The latter is probably the most prudent option.

The "pure" liberal free market solution would be for the U.S. to drop the tariffs and just let the American companies go out of business. In a truly liberal free trade and free market system, the government shouldn't intervene if a company can compete. If American companies cannot compete with the price of Chinese solar panels then they should be allowed to go out of business. This preserves the sanctity of the free market and the consumer benefits from the low cost of solar energy products. And in the case of California, cheap solar panels would be available to consumers and will help California meet its renewable energy goals.

74. Roth, *supra* note 68.

75. Katie Valentine, *California Lawmakers Introduce Major Package of Bills to Tackle Climate Change* CLIMATE PROGRESS (Feb. 11, 2015), <http://thinkprogress.org/climate/2015/02/11/3621740/california-climate-legislation/>.

This solution is probably more extreme than a bilateral agreement and carries many negative ramifications. Specifically there would be intense, negative political ramifications. Companies that went out of business and the people who lost their jobs would be able to put the blame squarely at the feet of the government's inaction. At a time when the economy is slowly recovering this could be seen as unnecessarily harsh action by the government. While President Obama supports more liberalized free trade measures like the Trans-Pacific Partnership, which will be discussed further below, Democrats, labor unions, and environmental groups oppose it.⁷⁶ The friction between President Obama and his traditional allies demonstrates the political pitfalls of pursuing liberal free trade that could come at a cost to American workers.

A second solution would be some kind of bi-lateral trade agreement between the U.S. and China. It could possible take the form of the settlement between the European Union and China in which Chinese solar panel manufacturers would agree to price floors and volume ceilings. This would enable American producers to stay somewhat competitive against the Chinese solar panels.

Such an option was unfathomable years, even months ago. China is one of the biggest contributors to global greenhouse gas emissions, accounting for approximately twenty-six percent of global greenhouse gas emissions.⁷⁷ The growth of the Chinese economy over the last several decades is well documented.⁷⁸ However, this growth has come at great expense to the environment in China. Problems such as smog in Beijing and other cities, badly polluted water and soil in the countryside persist.⁷⁹

Surprisingly, there has been recent progress between the U.S. and China in terms of environmental policy. During his late 2014 visit to China, President Obama agreed to a climate change pact with Chinese President Xi

76. David Nakamura, *Obama Says he Willing to Defy Democrats on his Support of Trans-Pacific Partnership*, WASH POST (December 3, 2013), https://www.washingtonpost.com/politics/obama-says-he-willing-to-defy-democrats-on-his-support-of-trans-pacific-partnership/2014/12/03/25edcaf4-7b30-11e4-84d4-7c896b90abdc_story.html.

77. 2015 *Sustainable Energy in America Factbook*, Bloomberg New Energy Finance (February 2015).

78. Xiaodong Zhu, *Understanding China's Growth: Past, Present, and Future*, *Journal of Economic Perspectives*, Volume 26, Number 4 at 104-105 (Fall 2012).

79. *The government amends its environmental law*, *ECONOMIST*, (May 17, 2014), <http://www.economist.com/news/china/21602286-government-amends-its-environmental-law-green-teeth>

Jinping.⁸⁰ The agreement seeks to curb greenhouse gas emissions in both countries over the next two decades.⁸¹ The agreement shows that there can be cooperation between the U.S. and China. And if these two countries can work on the broad strokes of an agreement to combat such a serious issues like global greenhouse gas emissions and climate change then it is possible for the two countries to come together on the issue of solar panels.

There are many possible forms that a bilateral agreement between the U.S. and China could take. The Solar Energy Industries Association, an American trade association, has produced a draft of an agreement that would be even more comprehensive than what the EU did and could help resolve larger issues in the solar panel industry. Under SEIA's plan, the US and China would remove any trade tariffs targeted against one another.⁸² The plan also calls for the establishment of a "Solar Manufacturing Settlement Fund."⁸³ Essentially China would pay money into a fund that would help American companies hurt by the solar panel trade conflict.⁸⁴ In exchange, the U.S. would drop all judicial or regulatory actions against Chinese solar panel companies.⁸⁵

A final aspect of the SEIA plan would be the establishment of a "Solar Development Institute."⁸⁶ One of the concerns about cheap Chinese solar panels is that they are not the best available technology.⁸⁷ Chinese companies were able to produce such large amounts of solar panels at low prices that American companies, whose technology was presumably better but more expensive, were unable to compete.⁸⁸ The American and Chinese governments would kick in money to establish a Solar Development Institute, which would be an American-based think tank.⁸⁹ The think tank would serve as a vehicle to develop solar energy policies and technologies

80. Matt Hoyer and Holly Yan, *U.S. and China reach historic climate change deal, vow to cut emissions*, CNN (Nov. 12, 2014), <http://www.cnn.com/2014/11/12/world/us-china-climate-change-agreement/>.

81. *Id.*

82. Solar Energy Industries Association, *Draft Recommendation to Governments for the Establishment of a U.S.-China Solar Agreement*, <http://www.seia.org/research-resources/draft-recommendation-governments-establishment-us-china-solar-agreement> [hereinafter SEIA Draft].

83. *Id.*

84. *Id.*

85. *Id.*

86. *Id.*

87. Bradsher, *supra* note 7.

88. *Id.*

89. SEIA Draft, *supra* note 82.

to prevent another trade conflict from arising and to improve solar panel technology worldwide.⁹⁰

Some kind of bilateral agreement, like the EU-China settlement or the SEIA plan is probably the best course of action for the U.S. and China to take. It allows all the parties involved to reach a compromise that bolsters the solar panel industries of both countries. And the SEIA's proposed Solar Development Institute encourages a sense of cooperation that could help prevent future conflicts and serve as a model for other kinds of trade disputes.

VIII. Other Board Trade Strategies the U.S. Could Implement

Apart from pure free market solutions or a bi-lateral agreement between the U.S. and China, there are several boarder trade strategies that the U.S. could take to combat trade issues with China; these trade strategies could be useful to solar panel trade.

One strategy is increased use of the World Trade Organization ("WTO") dispute resolution process.⁹¹ The U.S. has a successfully used the WTO's dispute processes in order to compel China to eliminate practices that violate WTO rules.⁹² As of March 2015, the U.S. has initiated sixteen WTO disputes against China.⁹³ By maximizing trade enforcement resources, the U.S. can challenge Chinese trade practices that are "systemic and have the greatest economic impact."⁹⁴ This can include filing disputes against Chinese subsidies to Chinese solar companies.

This first trade strategy might result in push back from China, as China could try to use WTO rules and disputes to undo WTO commitments or to "retaliate against its trading partners."⁹⁵ Ideally, the U.S. "will be able to convince China that these actions undercut [China's] own credibility at the WTO."⁹⁶ However, the U.S. would need to communicate to China that the U.S. is prepared to respond to Chinese trade abuses by using the WTO

90. *Id.*

91. Ed Gerwin and Ryan McConaghy, *China's Trade Playbook: Why America Needs a New Game Plan* 13 (Feb. 2, 2012) [hereinafter Gerwin and McConaghy].

92. *Id.*

93. World Trade Organization, Dispute Settlement Gateway, accessed Mar. 14, 2015. Available at: https://www.wto.org/english/tratop_e/dispu_e/find_dispu_cases_e.htm?year=any&subject=none&agreement=none&member1=USA&member2=CHN&complainant1=true&complainant2=false&respondent1=false&respondent2=true&thirdparty1=false&thirdparty2=false#results.

94. Gerwin and McConaghy, *supra* note 91 at 14.

95. *Id.*

96. *Id.*

dispute procedures and other legal avenues.⁹⁷ As one article puts it, "America will never be able to 'out-protectionist' China. But [America] should make it clear that China will never 'out-lawyer' the U.S."⁹⁸

This strategy could be effective since the U.S. would be using the current legal and trade frameworks rather than other more extreme political or economic measures, like trade tariffs. However, it is important to consider the antagonistic effects it could have on China. With the U.S. trying to cultivate a stronger relationship with China, the U.S. must be prepared to use the disputes measures available but must also keep an eye towards maintaining a good relationship with China.

Another overall trade strategy that the U.S. could try to use is to continue working with other trading partners.⁹⁹ In particular the U.S.'s international trade interests could be well served by the Trans Pacific Partnership ("TPP") deal.¹⁰⁰

The Trans Pacific Partnership is a proposed Asia-Pacific trade agreement, currently being negotiated between twelve countries.¹⁰¹ These countries are: Australia, Brunei, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore, and Vietnam.¹⁰² The large and growing Asia-Pacific markets are "key destinations for U.S. manufactured goods, agricultural products, and services suppliers."¹⁰³ U.S. goods exports to TPP countries totaled \$698 billion in 2013 and represented 44 percent of the total U.S. goods exports.¹⁰⁴

The U.S. could use the TPP's leverage to obtain "real and measurable trade reforms from potential new members" like China, and seek to expand, high-standard trade with other like-minded trading partners, like the

97. *Id.*

98. *Id.*

99. *Id.*

100. *Id.*

101. *Overview of the Trans Pacific Partnership*, accessed Mar. 14, 2015. Available at <https://ustr.gov/tpp/overview-of-the-TPP>. As of the writing of this note there is a tremendous amount of political animosity towards the Trans Pacific Partnership. This note does not attempt to assess or furnish any opinions about the effects the TPP could have on American laborers or the American economy. I am only advocating the conclusion of the TPP in the context of strategies that would improve trade relations with China, improve solar panel trade, and increase solar energy in the U.S. and California.

102. *Id.*

103. *Id.*

104. *Id.*

European Union.¹⁰⁵ Through these efforts the U.S. can “create international leverage against China’s more restrictive trade policies. . . .”¹⁰⁶

However, the U.S. must be wary not to overly antagonize China. Working with the Asia-Pacific countries under the banner of the TPP can be used as a carrot for China, rather than a stick. The U.S. and other TPP countries could allow China to join the TPP in exchange for China becoming “more fully committed to removing unfair barriers to trade.”¹⁰⁷

IX. Current Federal Policies to Help Solar Energy Consumers and Developers

It would benefit the American solar industry for the federal government to either reach a bilateral agreement with China or use current international frameworks to force China to promote more fair trade practices. However, given the current political climate it will be hard to reach those kinds of agreements at the present time.¹⁰⁸ This section will outline current policies the federal government is taking to bolster the solar industry, and discusses ways that some of these policies can be improved.

One of the strategies that the federal government is currently employing to bolster the domestic solar industry is the use of subsidies. Federal subsidies for solar energy have had an uneven history in the United States. The federal government has been providing direct support for solar manufacturing since the Carter administration.¹⁰⁹ The Energy Tax Act of 1978 provided tax credits to homeowners who invested in solar, and the Public Utility Regulatory Policies Act “required utilities to purchase power from qualified renewable power facilities.”¹¹⁰ Despite these programs, production of solar power remained small.¹¹¹ In fact, by the mid-1980s, domestic PV manufacturers were selling products at a loss.¹¹² Solar manufacturing slumped even further when the Tax Reform Act of 1986 reduced the Investment Tax Credit (“ITC”)¹¹³ to ten percent in 1988.¹¹⁴

105. Gerwin and McConaghy, *supra* note 91 at 14.

106. *Id.*

107. *Id.*

108. Nakamura, *supra* note 76.

109. The Kearny Alliance, *China’s Solar Industry and the U.S. Anti-Dumping/Anti-Subsidy Trade Case* 19 (May 2012).

110. *Id.*

111. *Id.*

112. *Id.* at 20.

113. Although the U.S. International Trade Commission is also abbreviated as “ITC,” the Investment Tax Credit and the Commission are unrelated.

However, in 2005, President Bush signed the Energy Policy Act.¹¹⁵ The Energy Policy Act included a thirty-percent ITC for “property owners who installed commercial and residential solar energy systems.”¹¹⁶

The current residential ITC is one of the most well known solar subsidies available. The tax credit initially applied to residential solar-electric systems, solar water heating systems, and fuel cells.¹¹⁷ With *The Energy Improvement and Extension Act of 2008* the tax credit was extended to include small wind-energy systems and geothermal heat pumps (effective January 1, 2008).¹¹⁸ In addition to being extended, a \$2,000 credit limit was removed for solar-electric systems beginning in 2009.¹¹⁹ Under the ITC, a taxpayer may claim a credit of thirty percent 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.”¹²⁰ The expenditures can include labor costs, assembly, or original system installation for the piping or wiring to interconnect the system to the home.¹²¹

Another important tax credit similar to the residential ITC is the business energy investment tax credit. The business ITC provides a credit equal to thirty percent of expenditures and has no maximum credit or cap.¹²² Eligible solar energy equipment includes equipment that uses solar energy to generate electricity; to heat, cool, or provide hot water for use in a structure; or to provide “process heat.”¹²³ Hybrid solar lighting systems, which use solar energy to illuminate the inside of a structure using fiber-optic distributed sunlight, are eligible as well.¹²⁴ The goal of both the residential ITC and the business ITC is to be a “stable, multi-year incentive . . . to encourage private sector investment in solar manufacturing and solar project construction.”¹²⁵

114. *Id.*

115. *Id.*

116. *Id.*

117. *Residential Renewable Energy Tax Credit*, <http://programs.dsireusa.org/system/program/detail/1235> (last updated May 13, 2015).

118. *Id.*

119. *Id.*

120. *Id.*

121. *Id.*

122. *Business Energy Investment Tax Credit (ITC)*, <http://programs.dsireusa.org/system/program/detail/658> (last updated May 13, 2015).

123. *Id.*

124. *Id.*

125. Zachary Scott Simmons, *SUBSIDIZING SOLAR: THE CASE FOR ENVIRONMENTAL GOODS AND SERVICES FROM THE GLOBAL SUBSIDIES REGIME*, 32 *UCLA J. ENVTL. L. & POL’Y*, 422, 434 (2014).

Both the residential ITC and the business ITC were renewed for eight years under *The Energy Improvement and Extension Act of 2008*.¹²⁶ Both of these tax credits are set to expire at the end of 2016. And in the case of the business ITC, the credit will reduce from thirty percent to ten percent.¹²⁷ Renewal of the two tax credits could be one of the ways that the federal government can assist the domestic solar industry, especially in light of the ongoing trade dispute with China. Also, the tax credits can help California residents and business with their solar energy demand while helping the state achieve its renewable energy goals. However, with the Republican Party increasing their numbers in the House of Representatives, and taking control of the Senate, the renewal of the tax credits are not certain.¹²⁸ Many Republicans have largely been against using incentives and taxpayer money to assist the development of renewable sources of energy.¹²⁹ It will be worth monitoring over the next year and a half whether the Republican Congress will try and kill the tax credits, which many believe have been one the most important policy tools in driving the increase in solar installations.¹³⁰

Another important tool that was developed to boost the domestic solar energy industry was the Advanced Energy Manufacturing Tax Credit (“MTC”). *The 2009 American Recovery and Reinvestment Act* (“ARRA”) included a competitive thirty-percent tax credit for expenditures on advanced energy manufacturing projects.¹³¹ Over 500 applications were submitted because the tax credit was capped at \$2.3 billion.¹³² The Department of Energy and the Internal Revenue Service allocated the MTCs based on “a project’s commercial viability, job creation prospects, contribution toward greenhouse gas emissions reductions, and other factors.”¹³³ The program reached its original cap in 2010, and MTCs were awarded to 183 renewable energy projects.¹³⁴ Although the Advanced Energy Manufacturing Tax Credit reached its cap in 2010, not all the funds were distributed and “Phase II” of

126. *Id.*; see also *Renewable Energy Tax Credit*, *supra* note 117.

127. *Id.*

128. Terfis Team, *Solar Investment Tax Credit: Does Republican Win Increase Uncertainty On Extension?* FORBES (Nov. 6, 2014), <http://www.forbes.com/sites/greatespeculations/2014/11/06/solar-investment-tax-credit-does-republican-win-increase-uncertainty-on-extension/>.

129. *Id.*

130. *Id.*

131. The Kearny Alliance, *supra* at 20.

132. *Id.*

133. Simmons, *supra* note 125 at 432.

134. *Id.*

the program was launched in order to utilize \$150 million in tax credits that were not used by the previous awardees.¹³⁵

Renewing this type of tax credit, or instituting a similar tax credit, could be an effective means of increasing solar manufacturing. The tax credit was in extreme demand and competitive to obtain.¹³⁶ An increase in domestic manufacturing has the benefit of promoting American job growth. One of the issues of competing with Chinese-made solar panels is that they are much cheaper than their American-made counterparts. By giving domestic companies a tax credit, it can help to offset some of the costs of the solar panels that the company would pass on to the consumer. However, again, the current political climate may make it difficult to institute a new federal tax program to assist solar energy manufacturers.

Apart from federal subsidies in the form of tax credits, federal aid can come in the form of grants, loans, and loan guarantee programs.¹³⁷ A third policy tool that has been previously used at the federal level was the Section 1603 Treasury Program.¹³⁸ The Section 1603 Treasury Program was created in 2009, and allowed solar and other renewable energy developers to receive direct grants from the federal government in lieu of the investment tax credit.¹³⁹ The program was instituted “in recognition of the desirability of tax incentive policies for renewable energy development and the fact that a weakened national economy would restrict the availability of the private sector tax equity that typically financed renewable energy projects.”¹⁴⁰ Under Section 1603, the federal government could give grants equal to thirty percent of a project’s costs directly to commercial solar property owners.¹⁴¹ The program expired on September 30, 2011.¹⁴²

Instituting a direct grant program could be very effective at increasing the amount of innovation in the solar industry. A direct grant program is better than tax credits because provides companies with direct infusions of cash that they can then use to hire more employees, or develop new technologies. This type of program is probably the most controversial because the government would be providing direct funds to private companies at the expense of taxpayers. As has been mentioned earlier, the

135. Energy Department, *48C Phase II Advanced Energy Manufacturing Tax Credit Program Selections*, <http://energy.gov/downloads/48c-phase-ii-advanced-energy-manufacturing-tax-credit-program-selections>.

136. *Id.*

137. Simmons, *supra* note 125, at 434.

138. The Kearny Alliance, *supra* at 20.

139. *Id.*

140. Simmons, *supra* note 125, at 434.

141. *Id.* at 435.

142. *Id.*

current political climate may make such a direct grant program impossible. Many Republicans in federal office are against the government using taxpayer funds to help the solar industry.¹⁴³ While some might be able to support a program that is reducing the tax burden of companies and individuals, like the investment tax credits, they would be unlikely to support direct grants.¹⁴⁴ While the direct grants to companies might be the simplest and easiest way the government can support the solar industry, it is probably the most unlikely policy proposal discussed in this note.

Besides direct federal grants, support from the federal government has taken the form of loan and loan guarantee programs. One of these programs was the Department of Energy Loan Guarantee Program ("LGP").¹⁴⁵ The LGP was created in the Energy Policy Act of 2005 in order to overcome the challenges that renewable energy projects face in obtaining long-term financing.¹⁴⁶ The financing challenge for many energy projects comes in the transition from research and development to commercial deployment.¹⁴⁷ Through the LGP, the Department of Energy "guarantees the debt of privately-held energy generation and manufacturing projects, guaranteeing to a private lender that if the defaults on a loan related to the project, the government will step in to repay the outstanding balance."¹⁴⁸

The DOE administers two primary loan programs, the permanent Section 1703 LGP and the temporary Section 1705 LGP.¹⁴⁹ The permanent Section 1703 LGP was introduced in 2005.¹⁵⁰ It applies to projects that try to mitigate air pollutants and employ new or improved technology compared to commercial technologies.¹⁵¹ The temporary Section 1705 LGP was introduced in the ARRA "for [the] rapid deployment of renewable energy and electric power transmission projects [.]"¹⁵² The section 1705 Program provided almost \$13.3 billion in loan guarantees for solar energy projects, with \$1.3 billion going towards solar manufacturers and the remaining \$12

143. Trefis Team, *supra* note 128.

144. *Id.*

145. The Kearny Alliance *supra* note at 21.

146. Solar Energy Industry Ass'n, *Loan Guarantee Program*, <http://www.seia.org/policy/finance-tax/loan-guarantee-program> (visited Mar. 15, 2015).

147. *Id.*

148. *Id.*

149. Simmons, *supra* note 125, at 436.

150. *Id.*

151. *Id.*

152. Daniel K. Tracy, *The Missing Lending Link: Why a Federal Loan Guarantee Program is Critical to the Continued Growth of the Solar Industry*, 16 N.C. BANKING INST. 349, 363 (March 2012).

billion going towards solar generation projects.¹⁵³ The program expired on September 30, 2011.¹⁵⁴

Apart from the tax credits, direct grants, and loan programs, the federal government is also supporting the solar industry through the Department of Energy's SunShot Initiative. The SunShot Initiative "aims to reduce the price of solar energy systems by about 75% between 2010 and 2020."¹⁵⁵ The program hopes that by achieving this target the unsubsidized cost of solar energy will become competitive with other types of energy sources and help pave the way "for rapid, large-scale adoption of solar electricity across the United States."¹⁵⁶

The program has had major effects on the state of the solar industry. At the end of 2014, the Department of Energy reported that because of the growth in solar development, the solar industry had progressed sixty percent of the way toward the 2020 goal.¹⁵⁷ SunShot works towards meeting the 2020 goal by promoting market competitiveness with "cost-based metrics," assisting the spread of technology and innovation, and enabling growth in solar energy deployment.¹⁵⁸ SunShot works in five areas of focus: PV, concentrating solar power ("CSP"), systems integration, technology to market, and soft costs.¹⁵⁹

In terms of PV and CSP, SunShot funding supports technology research and development that the Department of Energy believes has the potential to "yield significant cost reductions, efficiency improvements, and improved reliability standards."¹⁶⁰ The Department of Energy, in its 2014 SunShot Initiative Portfolio, discussed many of the different research projects that the SunShot program was funding.¹⁶¹ For example, research is being conducted at the National Renewable Energy Laboratory in Golden, Colorado, related to diversifying the materials base for thin film solar cells.¹⁶² The research is attempting to accelerate the development process of "individual materials and PV device prototypes."¹⁶³ The results of this research have the potential to expand the materials options for PV's and

153. The Kearny Alliance, *supra* at 21.

154. *Id.*

155. U.S. Department of Energy, *SunShot Vision Study 2* (February 2012).

156. *Id.*

157. U.S. Department of Energy, 2014 *SunShot Initiative Portfolio 3* (August 2014).

158. *Id.*

159. *Id.* at 7.

160. *Id.*

161. *Id.* at 14.

162. *Id.* at 17.

163. *Id.*

produce new, abundant thin film solar cells.¹⁶⁴ The SunShot Initiative is spending millions of dollars funding dozens of these kinds of PV and CSP projects with the hope that there can be major, industry changing breakthroughs.

In terms of systems integration, SunShot funding supports strategies to increase solar penetration into America's electrical grid and assist with widespread solar development.¹⁶⁵ These research projects include projects related to supporting the development of power electronics technologies to reduce installation time and improve energy yield,¹⁶⁶ projects related to the development of open and "interoperable" communication constructs and systems,¹⁶⁷ and projects related to supporting solar plant performance and reliability.¹⁶⁸ And like the PV and CSP research projects, the 2014 Portfolio identified dozens of projects that are spending millions of dollars trying to improve the solar industry.

In terms of "technology to market" programs, SunShot funding supports "commercialization, market readiness, and domestic manufacturing supply chains."¹⁶⁹ While many of the programs related to "technology to market" are research projects being conducted in universities (like the PV, CSP, and systems integrations projects), some are very different. For instance one of the major "technology to market" programs is the SunShot Incubator Program.¹⁷⁰ The SunShot Incubator Program provides assistance to small businesses to overcome technological barriers and "de-risk their products and services" while at the same time encouraging private investment.¹⁷¹ The program focuses "on rapidly commercializing products and services with the potential to make solar more affordable."¹⁷² The 2014 Portfolio identified dozens of companies receiving funding from the SunShot Incubator Program and described the types of work these companies are doing to improve the solar industry.

In addressing "soft costs" SunShot funding supports "market transparency, workforce training, location solutions, and process improvements to make solar deployment faster, easier, and cheaper."¹⁷³ The 2014 Portfolio described the various programs that SunShot is undertaking

164. *Id.*

165. *Id.* at 7.

166. *Id.* at 66.

167. *Id.* at 69.

168. *Id.* at 70.

169. *Id.*

170. *Id.* at 76.

171. *Id.*

172. *Id.*

173. *Id.* at 7.

to improve the outlook in terms of the “soft costs”¹⁷⁴ of solar energy. These programs include working to empower state and local leaders to develop strategies and solutions to reduce the costs of solar energy¹⁷⁵; policy stacking and foundational analysis projects that work to better inform policymakers at the state, local, and federal levels¹⁷⁶; harnessing “Big Data” and using analytics to improve decision making¹⁷⁷; and providing training to promote a high quality work force.¹⁷⁸

The collection of programs and funding projects in the SunShot Initiative demonstrates that the federal government is committed to ensuring that the solar industry in the United States is strong. SunShot is a good example of how the federal government can seek to improve the domestic solar energy industry. Of all the programs discussed, this may be the most effective because it is the least controversial. It involves lots of research for improving technology, while at the same time trying to improve market conditions without necessarily distorting those markets in the same way that direct funding or tax credits do. Continued successes via the SunShot program will be important in driving the solar industry while the trade conflict with China continues, especially until there is some kind of agreement in place.

X. California State Policies to Increase Solar Energy

California has policies and programs in place to increase solar energy. One of the major California programs geared towards increasing solar installations is the California Solar Initiative (“CSI”). Governor Arnold Schwarzenegger passed the CSI in 2006 with the goal of reaching 1,950 megawatts of installed solar capacity by the end of 2016.¹⁷⁹ The CSI is overseen by the California Public Utilities Commission (“CPUC”) and provides incentives to customers in “investor-owned utility (“IOU”) territories ...”¹⁸⁰ These are customers in the territories of Pacific Gas and Electric Company (“PG&E”), Southern California Edison (“SCE”), and San

174. Soft costs can include financing, customer acquisition, permitting, installation, labor, inspection, and other non-hardware costs. *See Id.* at 95.

175. *Id.* at 99.

176. *Id.* at 105.

177. *Id.* at 106.

178. *Id.* at 111.

179. California Public Utilities Commission, *About the California Solar Initiative*, <http://www.cpuc.ca.gov/puc/energy/solar/aboutsolar.htm> (last modified Aug. 10, 2015).

180. California Public Utilities Commission, *California Solar Initiative Program Handbook 1* (August 2014).

Diego Gas & Electric (“SDG&E”).¹⁸¹ The three major programs of the CSI are the general market (“GM”) program and the low-income residential incentive programs, the Multifamily Affordable Solar Housing (“MASH”) Program, and the Single Family Affordable Solar Homes (“SASH”) Program.¹⁸²

The GM CSI program offers two types of incentives, Expected Performance Based Buydown (“EPBB”) and Performance Based Incentives (“PBI”).¹⁸³ The EPBB incentives are paid based on “verified solar energy system characteristics such as location, system size, shading, and orientation.”¹⁸⁴ The PBI incentive is a “flat cents-per-kWh payment for all output from a solar energy system over its five years of operation.”¹⁸⁵

In terms of lower-income incentives, the MASH Program offers “incentives for solar energy installations on existing multifamily affordable housing that meets the definition of low-income residential housing” established in the California Public Utilities Code.¹⁸⁶ The MASH Program had two tracks.¹⁸⁷ Track 1 provided “fixed, up front, capacity-based EPBB incentives,” and proved so in demand that Track 2 was closed.¹⁸⁸ The SASH Program provides “fully subsidized 1 kW solar energy systems to single-family very low-income households and highly subsidized systems to other single-family low income households[.]”¹⁸⁹

While the CSI is a successful program in terms of increasing the amount of solar installations, California is in a position to adopt more solar boosting programs. The California government is very different than the federal government in terms of its commitment to renewable energy. Governor Brown does not face the same kind of ideological opposition as President Obama, with California’s Assembly and Senate firmly controlled by the Democratic Party.¹⁹⁰ California is in a position to build on the success of the CSI and implement programs similar to those that have been passed on the federal level.

California should attempt to undertake investment tax credit programs that would provide a percent back to consumers and businesses

181. *Id.*

182. *Id.*

183. *Id.* at 4.

184. *Id.*

185. *Id.*

186. *Id.* at 5.

187. *Id.*

188. *Id.*

189. *Id.*

190. *Senate Roster*, <http://senate.ca.gov/senators> (accessed Mar. 15, 2015); *see also Members*, <http://assembly.ca.gov/assemblymembers> (accessed Mar. 15, 2015).

that install solar energy systems on their buildings. This strategy could become an important one, especially if the Republican Congress does not extend the current federal ITC programs for solar. California could also develop a program similar to the 1603 Treasury Program, and provide direct funds to companies that are in solar development. Another possible program a state level version of the various loan guarantee programs that were established by the Department of Energy. The strategy that is having effective results on the federal level is the SunShot Initiative. Since California is a leader in the development of solar energy policies and technology, having a California version of SunShot could be an effective policy initiative. By investing in research and development, and in small businesses, California could firmly cement its station as the world's leader in solar technology development. With the ability of the federal government to make progress towards a deal with China related to solar panels, California will need to use a whole gamut of strategies in order to mitigate the damage that is being done by the solar trade conflict. This is especially true if California is going to meet its ambitious renewable energy goals.

XI. Conclusion

The ongoing trade conflict between the United States and China is an issue that not only affects the United States as a whole, but California in particular. California has very ambitious, but attainable, renewable energy goals. Solar energy is a necessary aspect of these goals. In order for California to obtain the goals laid out by Governor Brown, the trade issue between the United States and China must be resolved. And the conflict cannot be resolved through the use of trade tariffs. Apart from tariffs, there are several strategies, such as collective international pressure or a bilateral agreement between the United States and China, which would help to resolve the conflict. However, proponents of increasing solar energy must also be realistic and understand that other various factors, like political pressure, might not make those strategies viable. If the trade conflict cannot be resolved, then California and its citizens must be prepared to use strategies to continue bolstering the solar industry. There are a wide range of federal options, like the residential and business ITCs, that can help to ease the price of solar technology. And there are broad frameworks, like the SunShot Initiative, that provide funding for research and business to develop the domestic solar industry. California must embrace these federal strategies while developing its own strategies that are tailored to California's needs and meet its own ambitious plans.