

# Meaningful Change – Part 1

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## 1. Introduction

*“Every adversity contains, at the same time, a seed of equivalent opportunity!”*

-Napoleon Hill

Right now our country is in the midst of a major challenge. We have found ourselves beset by climate change doubters, even though over 95% of legitimate climatologists agree that climate change is real and caused by humans (anthropogenic).

We are also in a battle over free-trade, tariffs and protection of intellectual property.

Given the above, how can we use these two challenges to offset each other in a reasonable fashion? These are not independent, but rather two sides of the same issue: How can we craft a future with fairness and respect for our shared environment?

Consider the following: even if the U.S. changes its ways and starts moving rapidly to mitigate the climate change problem, it matters not one bit. Because we all share the same atmosphere, a large majority of major nations in the world must agree that climate change is critical, and act accordingly. Without some major incentive, I don't believe this will happen.

And hence we come to our current trade wars. Until recently the world's free-trade environment had resulted in increased prosperity for billions of people. However some countries have not played by the rules of this ecosystem (without naming names). This needs to be fixed. One fix is to let the trade wars run their course until the parties work a new agreement out, and I'm pretty sure that is what will happen (this time), but this is not a permanent fix.

Of course there are various trade organizations that try really hard to enforce reasonable trade practices, but many countries (and/or entities within countries) ignore them.

The other part of this environment is the world's shared information. As entities spend large amounts of funds to generate new information, a.k.a. intellectual property, a.k.a. patents and copyrights, we must find effective ways of protecting this, or the goose will die.

Part 1 of this paper contains:

- Some recent information about where climate change is going, especially sea level rise.
- How successful California has been in meeting its climate-related goals.
- Suggestions about how we might combine trade and climate change in a way that strongly encourages all nations to move in a direction that avoids future disruptions from both.
- Some ideas to protect and share intellectual property.

Part 2 will deal with how California uses several of its climate-related programs to benefit low-income individuals and disadvantaged communities, including a new program that it is hoped will run for the next ten years.

## 2. Sea Level Rise Due to Climate Change

Recently, I suggested that a 2°C (3.6°F) increase global warming by 2100 is completely unrealistic given the world's (and our country's) lack of action and the current political climate. I believe that we will have a 5°C (9°F) increase by the end of this century.

In a recent paper by the Proceedings of the National Academy of Sciences (referenced at the end of this paragraph), a Structured Expert Study utilizing 22 climate experts from the U.S. and U.K. was used to assess the likely sea level rise for various amounts of global warming. The study only looked at the contribution to sea level rise from the Greenland and Antarctic Ice Sheets' melt-water. The "business as usual scenario" in this paper is a global warming (average) of 5°C. Under this scenario there is a 50% probability of a 51 cm (1.7 ft.) ice sheet melt-water contribution to sea level rise by the year 2100. Also there is a 17% chance of a 112 cm (3.7 ft.) contribution, and a 5% chance of a 178 cm (5.9 ft.) contribution.<sup>1</sup>

Again note that the above numbers are only for the contribution to sea level rise from ice sheet melting. The above referenced paper added in other recent estimates of the other major causes of sea level rise (ocean thermal expansion, glaciers melting on other land masses and water storage) and came up a 50% probability total sea level rise of 69 cm (2.3 ft.), 17% chance of 174 cm (5.8 ft.) and a 5% chance of 238 cm (7.9 ft.) by 2100.

What the above means for coastal cities is covered below. After some serious searching I found a site that summarized the potential effects of sea level rise (below).<sup>2</sup>

U.S. sea level rise affects three areas the most. Here are estimates of its current and future impacts.

### Eastern Seaboard:

- *"Flood-prone areas in New York, New Jersey, and Connecticut lost \$6.7 billion in home values.*
- *"Atlantic City, New Jersey, regularly floods when it rains. A four-foot storm surge would flood 50% of it.*
- *"Boston is near the fastest warming body on Earth the Gulf of Maine. Storm damage affects the \$8 billion Waterfront District.*
- *"Annapolis, Maryland, now floods from high tide several days a week. Floor vents were installed to drain floodwaters from historic buildings. If sea waters rise 3.7 feet, the U.S. Naval Academy will be underwater.*
- *"Charleston, S.C., floods 50 days a year, up from four days a year in the 1980s. By 2050, it will flood every third day. North Carolina is losing six feet of coastal land every year. The Outer Banks are eroding away."*

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<sup>1</sup> Jonathan L. Bamber, et al, Proceedings of the National Academy of Sciences of the United States of America, "Ice sheet contributions to future sea-level rise from structured expert judgment", May 20, 2019, <https://www.pnas.org/content/early/2019/05/14/1817205116>

<sup>2</sup> Kimberly Amadeo, The Balance, " Rising Sea Level Effects, Projections, and Solutions", June 17, 2019, <https://www.thebalance.com/sea-level-rise-and-climate-change-4158037>

### **Florida and Gulf States:**

- *"In Miami, Florida, streets flood during high tide. The City of Miami Beach launched a five-year, \$400 million public works program. It's raising roads, installing pumps, and redoing sewer connections. By 2070, Miami streets will flood every single day. That threatens \$136 billion of real estate.*
- *"By 2048, the residents of 64,000 Florida homes will have to deal with chronic flooding.*
- *"Home prices in lower-lying areas of Miami-Dade County and Miami Beach are being affected. Properties at risk of rising sea levels sell at a 7% discount to comparable properties. By 2030, Miami Beach homes could pay \$17 million in higher property taxes due to flooding. By 2100, that could rise to \$760 million. That's if property owners, many of whom are from overseas, don't abandon the market.*
- *"In Louisiana, rising sea levels are flooding the Mississippi Delta. Louisiana is losing one acre an hour of wetlands. These areas nourish fisheries and protect New Orleans from hurricanes. They also absorb the greenhouse gases that cause global warming."*

### **West Coast:**

- *"Rising sea levels combined with sinking land will flood many areas around San Francisco by 2100. The land is sinking because of groundwater pumping. Parts of the airport, as well as large sections of Union City, Foster City, and Treasure Island would be underwater.*
- *"San Diego County, California, is building the largest seawater desalination plant in the western hemisphere. The plant will cost \$1 billion.*
- *"Most of the property in these cities are financed by municipal bonds or mortgages. Their destruction will hurt the investors and depress the bond market. Real estate markets could collapse in these regions, especially after severe storms.*

*"Rising sea levels worsen damage from hurricanes. The 17 most destructive U.S. storms in history occurred after 2000, with three in 2017. Their damage cost the economy \$700 billion.*

*"About 1.2 million Americans live in coastal areas at risk of "substantial damage" from hurricanes. Most of this densely populated area lies less than 10 feet above sea level, according to the National Hurricane Center. A 23-foot storm surge would flood 67% of U.S. interstates, including 57% of arterial highways. It would cover almost half of the rail miles, 29 airports, and almost all ports in the Gulf Coast area.*

*"Hurricane storm surges threaten 12 of the world's busiest airports. Hurricane Sandy inundated all three New York City airports. As a result, La Guardia Airport is using a \$28 million federal grant to build a flood wall, rainwater pumps, and a new drainage system."*

The above is what we will deal with if we do not start taking climate change seriously, and act on this belief. Oh, by the way, the sea level rise will not stop in 2100, but rather continue to rise. If it does not reach 7.9 feet by 2100, it will reach this level in a few years to decades later (if we don't start working hard to limit the effects of climate change).

### 3. The Good News - California

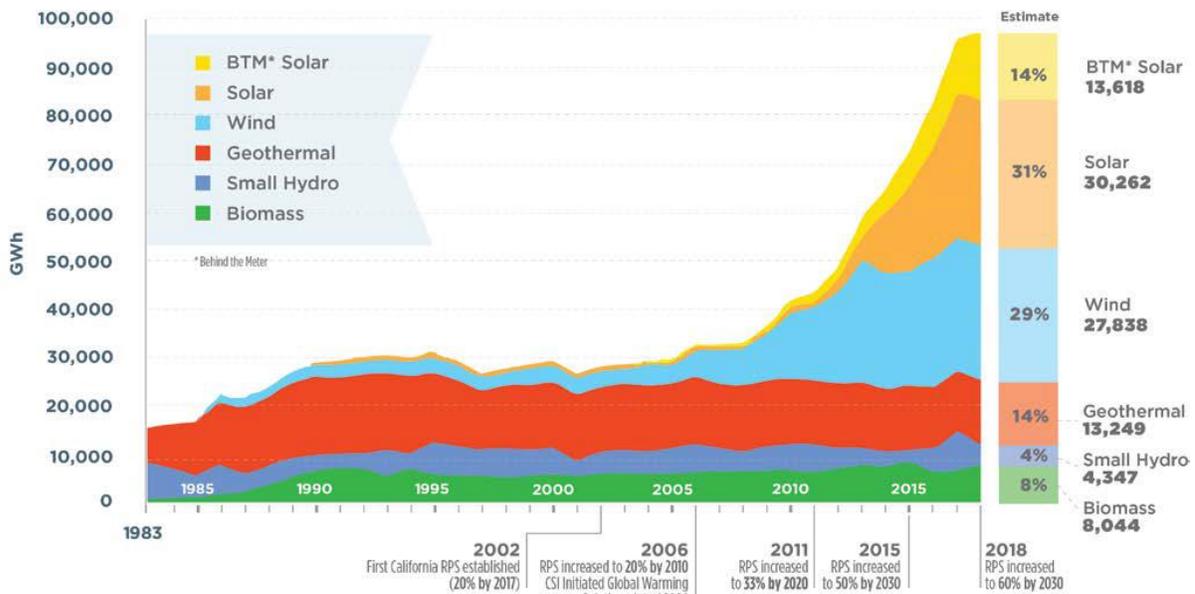
There is little doubt that California is leading the movement to a sustainable future, especially when it comes to dealing with climate change. I only beat my drum about this to show that this is possible, and we (including other U.S. states and those countries moving in a similar direction) are creating a critical mass of products and infrastructure required to deal with climate change.

California continues to meet its greenhouse gas reduction goals. Based on an analysis through 2018, the following are indicators of our progress from the referenced source.<sup>3</sup>

- Goals:** Renewables Portfolio Standard (RPS), which requires California load-serving entities to increase their procurement of eligible renewable energy resources (solar, wind, geothermal, biomass, and small hydroelectric) to 33 percent of retail sales by 2020 and 60 percent of retail sales by 2030.

**Result:** By the end of 2018 we exceeded the 2020 goal. The Energy Commission estimated that 34 percent of California’s retail electricity sales in 2018 will be / were provided by RPS-eligible renewable resources (see figure below, BTM = behind the meter).

**Result:** By the end of 2018, California is estimated to have more than 22,804 MW of wholesale renewable capacity. There are also roughly 8,400 MW of renewable energy projects that have received permits to build in California but are not yet operational (see second figure below).



Source: California Energy Commission, staff analysis November 2018

- Goal:** In 2006, the landmark Million Solar Roofs Initiative was codified under Senate Bill 1 which set forth a goal of installing solar photovoltaic systems on one million roofs by the end of 2018. SB1 and other legislation created the basis for a

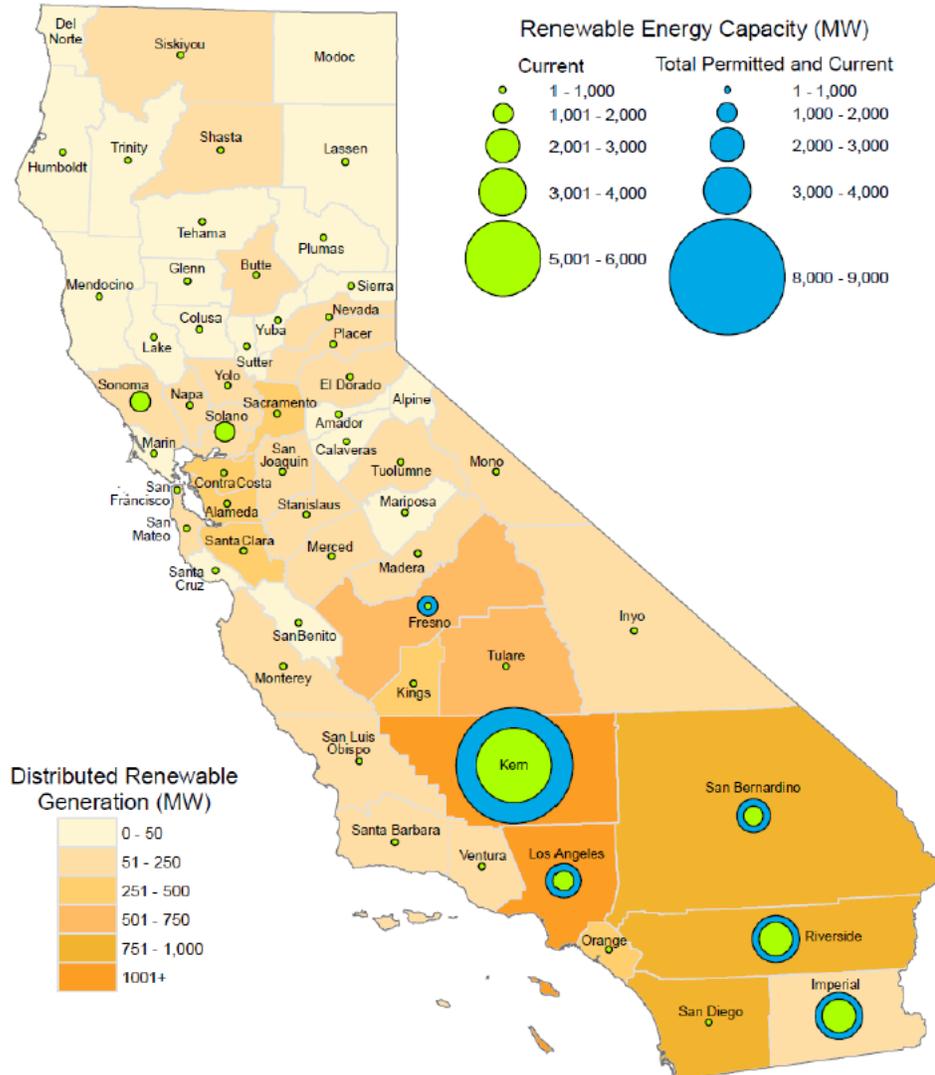
<sup>3</sup> California Energy Commission – Tracking Progress, <https://www.energy.ca.gov/sites/default/files/2019-05/renewable.pdf>

suite of incentive programs offered by the Energy Commission, the CPUC, and the state's utilities. These efforts are also broadly referred to as the California Solar Initiative (CSI). The Energy Commission's incentive program, the New Solar Homes Partnership (NSHP), was established with a 360 MW goal for installation of distributed solar on newly constructed homes. The overall goals for all CSI incentive efforts was 3,000 MW of solar energy systems on homes and businesses by the end of 2016.

**Results:** California is approaching the goal of a million solar roofs. Since 2006, there has been steady progress, and Energy Commission staff estimates that by the end of 2018, over 958,000 solar systems will be installed across California. Supporting this growth of distributed generation resources has been a rapid decline in the costs to install solar on homes and businesses (see second figure below).

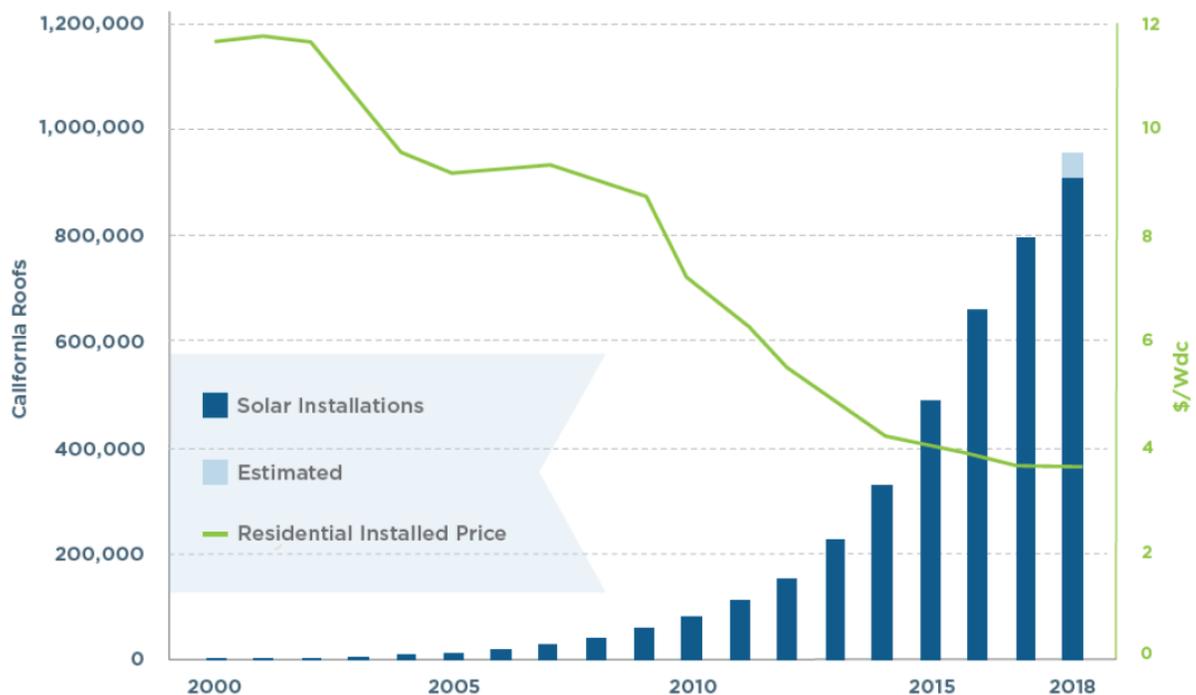
The goal of 3,000 MW on homes and businesses was achieved in 2015.

### Map of Renewable Capacity for On-Line Distributed Generation Systems, RPS-Eligible Wholesale Facilities, and Permitted Projects by County



Source: California Energy Commission, staff analysis November 2018

## Status of California's Million Solar Roofs



Source: California Energy Commission, staff analysis November 2018

**Result:** Building on the success of the NSHP, which supported reductions in the cost for solar and adoption of solar in the building industry, in May 2018, the Energy Commission adopted the 2019 Building Energy Efficiency Standards requiring the installation of solar photovoltaic systems on the majority of new homes, starting January 1, 2020. With continuing solar cost declines, solar is now cost-effective for new home construction across the state. This commitment to building highly energy efficient housing that is served by on-site or community-based solar photovoltaic systems will play an important role in California achieving the goal of a net zero carbon economy by 2045.

## 4. Linking Trade and Sustainable Practices

Trade is really complex. I commented in the Intro that trade and dealing with climate change are really part of the same issue. In this section, I will defend that position and make a few suggestions on how we might deal with both challenges with one set of international policies. Because these are complex issues, please bear with me while I develop these thoughts.

### 4.1. The World, Nations and Other Entities

Virtually all of the people in the world are within some nation, so when we talk about the world we are really talking about a collection of nations. We (the world's population) share certain resources, including our atmosphere, our seas, our information and the international financial system. It is in our collective best interest to assure that this sharing is done under a set of fair international regulations in order to avoid unexpected conflicts and assure that this is done for the benefit of all people.

I do not believe that a particular nation, group of nations or group of entities that reside in one or more nations has the right to dictate how any other nation rules or interacts with the entities within that nation.

Although nations interfering in the affairs of other nations are common, I don't believe that this is correct, although I don't intend to deal with that issue herein.

Nations do have the right to form bilateral or multilateral agreements with other nations to resolve various issues.

## **4.2. Suggested System**

In consideration of the above, the following is a minimal description of a system that might work:

- Each nation should submit an inventory of any emissions of harmful substances into the atmosphere, oceans or rivers (etc.) that flow into the oceans. These substances should include: greenhouse gases, airborne or waterborne substances that harm or materially change animal-life (including humans) or plant-life in the common ocean, atmosphere or those in other nations.
- These inventories will be confirmed by an international group of experts on these substances and their effects (see below) using space-based monitoring, monitoring in international ocean waters, and in the atmosphere over international waters or cooperating nations.
- The nations of the world should meet and reach the following agreements. This meeting will be under the supervision of a new or existing international organization:
  - A formula for any nation (all nations or virtually all nations) that is emitting harmful substances to establish a schedule to reduce and cease these emissions. This formula will be as simple as possible while being realistic, fair and equitable. Schedule for a specific nation will be called "Harmful Emissions Reduction Schedule" (HERS).
  - A formula for attaching a minimum and maximum tariff on exported goods for any nation that does not meet the schedule described in the prior bullet. Tariff will be called "Harmful Emissions Noncompliance Tariff", (HENT).
  - A panel of harmful substances monitoring experts will be defined (Harmful Substances Independent Panel of Experts or HSIPE).
- HERS will be established for each nation in consultation between that nation and HSIPE. This process will be reviewed and approved by the international organization mentioned in the prior bullet.
- Each nation not meeting their HERS will have a HENT applied. Each trading partner of a nation with HENT will use HENT's lower and upper rates to establish the tariffs on goods imported by each HENT-applied nation to that trading partner. Trading partners are free to negotiate specific tariffs between the lower and upper rate.

Two things: (1) I've kept the above description as lean as possible, while conveying the general idea, and (2) even though I hate acronyms, I've used a few in the above in order to (hopefully) keep the text more understandable.

## 5. Intellectual Property

Existing patent and copyright systems are largely respected by many major countries, but happily ignored by other major countries (or perhaps entities within those other countries). This is a tough problem to solve, because the World-Wide Web (WWW) has made the underlying information for much protected intellectual property out there, where anyone has access to it. Although I considered it, I don't believe that there is any possibility of changing the Internet or the WWW.

Then it occurred to me that the countries where the most egregious theft of intellectual property is occurring have the ability to greatly reduce or eliminate this given a strong enough incentive, because these countries are also the ones where their citizens' rights are most restricted.

I would suggest the following steps to solve the above problem.

- Take the patent and copyright system off of the public Internet and WWW, put it on a very secure virtual private network (VPN), and only allow access by authorized individuals (see below).
- Convene two international conferences supervised by existing or new trade organizations:
  - First a meeting of all nations that strictly abide by existing intellectual property (IP) laws (let's call these the Respecters for now)
  - Second a meeting consisting of all nations including the Respecters, and the Violators (nations that don't abide...)
- In the first meeting the Respecters will identify:
  - Details of IP-VPN as described above. This VPN will rarely allow general access but only compartmental "as required" access.
  - Stronger international patent and copyright regulations.
  - A system that allows the assessment of the value of a given patent or copyright based on its likely value during the period of its protection
  - A system for defining the fair license fees for this IP given its value.
  - A set of requirements for Respector Nation Members, and a method to allow Violator Nations to transition to Associate (or Probationary) Respector Nations, and ultimately full Respecters.
- In the second meeting, representatives of the Respector Nations will present the systems, requirements and method developed during the first meeting. Also:
  - Discussions will occur among all nations and a set of requested modifications to systems, requirements and methods will be defined.

- Violator nations will be given an opportunity to request Respector Nation admission.
- A third meeting among Respector Nations will be held to resolve the above issues.