A PACE Enabled World

An Innovative Public-Private Partnership That Makes Sustainability and Resiliency Upgrades Affordable For All Americans



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Introduction

Whatever the cause, it is clear that the climate is changing in ways that are having serious impacts on homes, businesses, and communities. In short, Americans are paying a significant price because of these changes.

Throughout the United States, individuals and communities struggle with the frequency and effects of extreme weather events whether they be hurricanes, flooding, or wildfires. Increased energy and utility costs, insurance premiums, and the billions of dollars of storm-related repairs are the unfortunate results of these changes.

Despite a recent groundswell of new political support for environmentally conscientious initiatives—including the Green New Deal and the Green Real Deal, which make ambitious yet largely unreachable calls-to-action—sustainability and resiliency upgrades remain limited and unaffordable for most Americans.

Property Assessed Clean Energy (PACE), which leverages a time-tested municipal financing mechanism, is an innovative public-private partnership model that makes residential and commercial property improvements in energy and water efficiency, renewable energy, and natural disaster mitigation financially accessible.

Established by states via legislation and enabled by local government approval, PACE financing increases funding access and enables Americans to improve the health and safety of their communities—protecting their homes and fostering sustainability in ways not possible through traditional financing options.

This databook presents the various data and research, including a recent regional economic impact analysis of projects funded by Ygrene Energy Fund by the University of Southern California's Schwarzenegger Institute for State and Global Policy, research out of the National Oceanic and Atmospheric Administration, and other climate resiliency research, demonstrating why, in the face of growing environmental and financial risks, PACE financing is an essential public policy.

Understanding the Context of Increased Risk

The Price Of A Changing Climate

Every year an increasing number of extreme weather events wreak havoc across the country and result in billions of dollars of property destruction, loss, and repairs.

2050s

Total cost \$4,187B

69.6 storms/year

\$10.75B/storm

The total cost of extreme weather events is estimated to be over

\$4 trillion by 2050¹

When homeowners are unable to make the necessary repairs to their homes, they face long-term deferred maintenance, or, in the worst case scenario when the home is uninhabitable, foreclosure and displacement. While some debate the cause of the record number of wildfires, storms, hurricanes, floods, tornadoes, earthquakes, and other damaging events, there is no question that the country is struggling to help property owners protect themselves and get them back on their feet after devastating events occur.

Environmental disasters have cost Americans over

\$1 trillion since 1980

Since 1980, environmental disasters have cost Americans over \$1 trillion.² The total cost of extreme weather events is estimated to reach over \$4 trillion by 2050. This increased risk directly impacts the insurance industry; as a result, the average home insurance rate has risen by 50 percent over the past 10 years alone.³



Total cost \$163B 2.7 storms/year \$6.04B/storm —

2030s Total cost \$1,642B 26.8 storms/year

\$8.63B/storm

2010s

Total cost \$644B 10.3 storms/year \$6.92B/storm

2000s

Total cost \$489B — 5.6 storms/year \$8.73B/storm

Total cost \$260B -5.1 storms/year \$5.10B/storm

1990s

America's Temperature on Sustainability and Clean Energy

Regardless of political affiliation, most Americans agree clean, renewable energy should be a national goal.

According to a national opinion survey by market research firm Maslansky & Partners, 70 percent of Americans agree that "in the near future, we should produce 100 percent of our electricity from renewable energy sources such as solar and wind."

However, like upgrades that protect against environmental disasters, sustainable home improvements can be financially impractical for most Americans to access. While there are many financing options available in the marketplace, very few are specifically geared to these types of critical, long-term improvements—and PACE is the only financing model required to either provide a public benefit or achieve a public policy goal.

70% of Americans

agree that "in the near future, we should produce 100 percent of our electricity from renewable energy sources such as solar and wind."



Need For Private Capital: PACE Financing Is Part Of The Solution

What PACE Set Out To Accomplish

Since 2008, when PACE financing was first established in California, it has shown tremendous success in accomplishing what state policymakers, business leaders, and community members across the country set out to achieve.

PACE has addressed two of the most significant barriers local communities, cities, and counties faced in confronting climate change: overcoming the upfront cost-barrier building owners face when investing in clean energy and resiliency property upgrades and unlocking the billions of dollars of investment capital needed to create healthier and safer communities... everywhere.

Before being embraced by policy makers and elected officials nearly nationwide, PACE began as a true grassroots public-private partnership in a handful of cities and counties in Northern and Southern California and Southeast Florida. Often true innovation is borne out of struggle, and the origins of PACE are no exception.

As the Great Recession deepened in 2008, local communities across the country found it more and more difficult to prioritize environmental stewardship in the face of growing joblessness and a shrinking economy. Policymakers in these regions struggled to find innovative solutions to reduce carbon emissions, create a healthier society with less pollution, and protect communities from the ravages of natural disasters – all while stimulating the economy and without the need for public funds.

Communities turned to PACE not as a panacea but as an important tool to jumpstart re-investment in renewable energy and resiliency projects that would produce local jobs and new economic opportunities.

Leveraging a time-tested municipal financing mechanism—enabled by cities and counties—that allows property owners to finance one hundred percent of the cost of clean energy and resiliency upgrades to their properties and repay that financing on their property tax bills, investment capital has poured into local communities to fund energy efficiency, renewable energy, and climate resiliency while creating jobs and growing local economies. What started with a few pilot programs has now grown to an initiative in use across the nation.

We are doing exactly what we set out to do by creating PACE nearly a decade ago: making financing for energy and resiliency upgrades more accessible and affordable while providing excellence in customer service every step of the way. From strengthening communities against the threat of natural disasters and the effects of a changing climate to sparking growth in local economies, we've seen PACE transition from an important program to an essential tool for homeowners and communities."

Dennis Hunter, Founder and Chairman of Ygrene Energy Fund



Total Industry Cumulative PACE Investment Amount (actuals)
Total Industry Number of Projects (scaled from 2018 actuals)

To date:

36 states

and Washington D.C. have passed PACE enabling legislation

20 states

have active commercial programs

3 states

have active residential and commercial programs

To date, 36 states and Washington D.C. have passed PACE enabling legislation, 20 states have active commercial programs, and three states have active residential and commercial programs. PACE has provided financing for over 220,000 clean energy and resiliency property improvements and injected over \$6 billion of private capital into local economies from California to Florida.

Yet, as successful a public policy as it has been, PACE is just scratching the surface in meeting the need for creating a clean energy and resilient economy built on healthier and safer communities across the country.

The nation needs PACE now more than ever.

Access To Affordable Financing: An Innovative Model For Making Critical Improvements To Homes And Businesses

PACE Financing At A Glance

PACE financing is an innovative financing solution making energy and resiliency upgrades affordable and accessible to all Americans.

PACE programs are structured to provide one hundred percent of the upfront cost for improvements meaning there is no down payment necessary to secure funding. Instead, the property owners repay the improvement cost over time-annually or semi-annually (or as part of their monthly mortgage payments)-through an assessment added to their property tax bills.

And because PACE financing is based partly on the value of the property not principally on homeowner credit history—responsible property owners who have built equity in their homes and have strong property related repayment histories are able to access funds that would otherwise be more expensive or unavailable through alternative financing options.



Roof Replacement Coral Gables, FL

Small business owner, Jackson Rip Holmes, needed to replace the roof on one of his commercial buildings located on Miracle Mile in Coral Gables, Florida, but did not have the financial means to pay for it. Using Ygrene's property assessed clean energy (PACE) financing, Jackson was able to not only replace his roof but also provide his tenants with a safer, more comfortable environment and save \$2,000 dollars in annual property insurance.

\$23,000 Project value

29% Insurance Premium Savings "My business was about to go under because I didn't have the money to pay for a much needed roof replacement. Thanks to the Ygrene program I was able to finance it and in turn save \$2,000 on insurance! Thank you Ygrene for saving my financial life!"

Jackson Rip Holmes, Small Business Owner

PACE property improvement projects:



Help protect homes and businesses from natural disasters



Lower monthly insurance premiums and utility bills



Create local jobs and drive economic growth in local communities



Contribute to shared sustainability goals

Understanding The Impacts of PACE Financing: Ygrene Energy Fund

Ygrene Energy Fund is the nation's leading PACE administrator. Ygrene finances property improvement projects in California, Florida, and, most recently, Missouri—the states where both commercial and residential PACE financing is enabled through legislation.

Since 2012, Ygrene:

- Financed +\$1.5 billion in property improvements
- Completed +66,000 projects
- Is operational in +500 cities and counties

PACE financing directly benefits the homeowners who make PACE improvements, but the innovative model has significant impacts on the broader economy and environment.

On average, per project, Ygrene California property owners:

+\$31K

could save an estimated \$31K in lifetime utility bills

+95K gallons

could conserve an estimated 95K gallons of lifetime water use

+35 metric tons CO₂

could reduce 35 metric tons of lifetime CO_2 emissions

	Year	Lifetime Utility Bill Savings	Job Years Added	Gross Economic Output	Avoided Total Disaster Costs (disaster losses + relocation costs)	Lifetime Insurance Savings
IPACTS	2013	\$3,154,000	23	\$3,288,000	\$351,000	\$608,000
	2014	\$29,753,000	376	\$48,215,000	\$10,876,000	\$9,846,000
CONO	2015	\$147,961,000	2,000	\$ 317,440,000	\$41,276,000	\$45,839,000
ATIVE E	2016	\$610,630,000	8,000	\$1,199,454,000	\$139,886,000	\$160,883,000
	2017	\$932,954,000	17,000	\$2,218,717,000	\$472,456,000	\$524,074,000
Ū	2018	\$1,115,191,000	24,000	\$3,037,949,000	\$819,070,000	\$879,732,000
	April 2019	\$1,165,633,000	27,000	\$3,328,381,000	\$961,315,000	\$1,015,740,000

While many believe extreme weather events are isolated to at-risk states like Florida and California, the reality is that no state is safe.

On average, per project, Ygrene Florida property owners:

+\$32K

could save an estimated \$32K in lifetime insurance premiums

+\$30K

could save an estimated \$30K in avoided disaster losses and relocation costs

TS	Year	Lifetime Water Savings (gal)	Lifetime Energy Savings (kWh-e)	Lifetime Carbon Abated (metric tons)
IMPAC	2013	1,863,000	15,130,000	4,000
ENTAL	2014	47,109,000	143,727,000	39,000
RONM	2015	422,943,000	683,059,000	184,000
E ENVI	2016	1,576,799,000	2,692,909,000	726,000
LATIVI	2017	2,623,025,000	4,266,508,000	1,168,000
сими	2018	3,200,331,000	5,266,610,000	1,494,000
	April 2019	3,298,392,000	5,576,545,000	1,607,000

These economic and environmental impacts have been felt across the country especially within the communities where Ygrene has invested in sustainability projects. Because of the availability of Ygrene PACE financing, property owners have protected their families from the increasing burden of natural disasters while also strengthening their local economy and doing their part to protect the environment.

A PACE Enabled World: Scaling for the Future

The following maps show risk levels for each state for different natural disasters as well as the combined risk levels for hurricane, fire, flood, and tornado across the country. The last map shows the impact in reduced risk if PACE were enabled and utilized across the country.

RISK LEVEL OF FIRE DAMAGE



RISK LEVEL OF HURRICANE DAMAGE

Data for these risk levels was gathered from public sources like FEMA and state databases to compile individual state scores based on normalizing hurricane, fire, flood, and tornado impact data on a 1-100 scale. Seismic disasters are not accounted for in these risk levels. Data is current as of August 2019.

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CUMULATIVE NATIONAL RISK OF EXTREME WEATHER



PACE FINANCING DECREASES RISK OF DAMAGE FROM EXTREME WEATHER ACROSS THE COUNTRY



Extreme Weather events have become more frequent and destructive

As such, there is an indisputable need for resiliency improvements across the United States—but most states lack the necessary legislation to make improvements affordable for average Americans.

Since 2013, Ygrene has completed over 66,000 PACE projects in Florida, California, and Missouri. Ygrene represents approximately 25% of the entire PACE industry. The PACE industry as a whole has financed over 220,000 residential and commercial projects across the country with the associated economic and environmental impacts approximately 4 times greater than the Ygrene impacts alone.

	Job Years Added	Augmented Gross Economic Output	Energy Saved (kWh-e)	Total Carbon Abated (metric tons)
Ygrene	27,000	\$3,328,381,000	5,576,545,000	1,607,000
Entire PACE Industry	92,000	\$11,145,696,000	18,674,084,000	5,382,000



\$21,000 Project value

96% Monthly Energy Savings

\$9.37 New Monthly Energy Bill

CASE STUDY

Residential Solar | Coral Gables, FL

When Vince Lago, a Commissioner in the City of Coral Gables, decided to reduce his carbon footprint, Commissioner Lago knew his investment would also need to reduce his future energy bills. Ygrene PACE financing enabled him to install 42 solar panels that now produce 100% renewable energy and save between \$190-290 per month on his electricity bills.

"Using Ygrene's PACE financing for my home's solar panels has been a great success. Not only is my house producing 100% renewable energy, my energy bills went from \$200-\$300 per month to \$9.37. I encourage all municipalities to join the Ygrene program and make this type of financing available to their residents as a means to a more sustainable and resilient future."

Vince Lago, Residential Property Owner, City of Coral Gables Commissioner



PACE INVESTMENT AND CARBON EMISSION REDUCTION PROJECTIONS

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* Conservative, Baseline, and Aggressive projections assume an 8%, 15%, and 30% industry growth rate respectively. These projection assumptions are informed by prior year over year industry growth rates.

But, even accounting for the economic and environmental impacts PACE has been able to achieve across the entire industry, PACE is just scratching the surface of what is possible and what is needed to make the 21st century clean energy economy a reality.

There are over 110 million buildings in the United States. According to the National Association of Home Builders, over half of those buildings were built prior to 1980. The median age of the housing stock in the U.S. is more than 37 years old. And, according to the Environment America Research and Policy Center, between 2007 and 2012 nearly 4 out of 5 Americans lived in a county that was affected by weather related disasters representing approximately 243 million people.

With an aging building stock and ever-increasing risks associated with severe weather disasters, investment in the built environment is essential to protect our homes and businesses in the 21st century.

The investment needed to improve those over 110 million buildings will be in the trillions of dollars. Policies like PACE are essential to mobilizing that investment in ways that benefit both the property owners making their homes and businesses safer and the communities where they reside.

The possible economic and environmental impacts of nationwide legislative adoption to expand programs like PACE into states struggling to combat the impacts of extreme weather and reduce carbon emissions are demonstrated below. This data shows the scaled impacts (based on per-project Ygrene-modeled impact data) at different levels across the nation.

The following projections are broken out to show the economic and environmental impacts:

- 1. If PACE financing expanded to fund 600 thousand projects across the country (10x current Ygrene output)
- 2. If PACE financing expanded to fund 6 million projects
- 3. If sustainable and resilient upgrades were made to every building in the United States

	PROJECTED ECONOMIC IMPACT ³						
Projects	Lifetime Utility Bill Savings	ty Job Years Avoided Total Disaster gs Added Costs (disaster losses + relocation costs)		Lifetime Insurance Savings			
600,000	\$10,552,697,000	251,000	\$8,702,970,000	\$2,236,553,000			
6,000,000	\$ 105,526,970,000	2,513,000	\$ 87,029,709,000	\$22,365,530,000			
111,950,622*	\$1,968,968,334,000	46,898,000	\$1,623,838,351,000	\$417,305,841,000			

	PROJECTED ENVIRONMENTAL IMPACT ³						
Projects	Lifetime Water Savings (gal)	Lifetime Energy Savings (kWh-e)	Lifetime Carbon Abated (metric tons)				
600,000	29,860,964,000	50,485,507,000	14,551,000				
6,000,000	298,609,647,000	504,855,079,000	145,517,000				
111,950,622*	5,571,589,287,000	9,419,806,690,000	2,715,121,000				

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*Estimated number of buildings according to Black Knight and 2016 Census Data

Projected Environmental and Economic Impact of PACE Financing Across the Country

PACE financing could have a tremendous impact on the environment and the economy if enabled nationwide.



PROJECTED IMPACT IF PACE WERE UTILIZED IN 15% OF ELIGIBLE BUILDINGS IN EACH STATE						
State	Carbon Reduction (metric tons)	Job Years Added	Disaster Loss Avoidance			
California	39,386,000	680,000	\$18,691,739,000			
Florida	29,563,000	510,000	\$14,029,854,000			
Texas	26,244,000	453,000	\$12,455,115,000			
New York	17,967,000	310,000	\$8,526,694,000			

PACE is Working: The Economic and Environmental Benefits

State Spotlight: California & Florida

Recent research out of the University of Southern California's Schwarzenegger Institute and Sol Price School of Public Policy performed a comprehensive regional analysis on PACE in California and Florida.

The research assessed the economic, resiliency, and environmental impacts of PACE throughout all sectors of the economy—quantifying the direct benefits of PACE improvements, which include energy and water savings, decreased natural disaster vulnerability, and reductions in environmental pollutants.

Direct benefits include:

- Reduction in energy and water use;
- Reduction in pollutants and GHG emissions;
- Reduction in natural disaster vulnerability; and
- Increased local investment in community health, sustainability, and resiliency.

To accurately assess the impact of Ygrene's investments across these markets, it is important to look beyond the direct benefits. Indirect benefits ("co-benefits") refer to economic stimulus stemming directly from Ygrene investments. These indirect benefits demonstrate that Ygrene has made a significantly positive economic impact in California and Florida.

Indirect co-benefits include:

- New jobs created from sustainability and resiliency investments;
- Increased business sales revenue, gross state product (GSP), and personal income;
- Increased tax revenues for various levels of government;
- Avoided business interruption and homeowner costs due to reductions in disaster related property damage and relocation;
- Increased spending due to monthly hazard insurance premium and utility bill savings; and
- Decreased prices of conventional energy and water services because of efficiency improvements.

Ygrene Has Significantly Improved California's Economy

In 2018, a series of devastating wildfires spread throughout the state and caused catastrophic damage.

Californians suffered an estimated \$400 billion in damages and future economic losses, which is equivalent to two percent of the United States gross domestic product (GDP). The 2018 wildfires cost the California Department of Forestry and Fire Protection \$1 billion to fight. Both numbers are new records.⁵

Additionally, a Rand study found that home insurance premiums rose in the state's most fireprone areas. The study estimated that the number of acres burned in the Sierra foothills-where insurance premiums continue to spike-will double in the next 30 years and quadruple by 2100.⁶

Embracing Ygrene investments could help the California economy mitigate the impact of future disasters especially as the state continues to struggle with the devastating impact of increasingly frequent wildfires. Investments have improved statewide employment and Gross State Product (GSP).

Employment⁷

+1,715

Between 2013 and 2018, Ygrene investments created an average of 1,715 job years annually in California.

Total Employment Impacts of California Ygrene PACE Financing

Cumulative Job Years Created through April 2019



Gross State Product (GSP)

+\$148.7M

Between 2013 and 2018, Ygrene investments increased California GSP by an average of \$148.7 million per year.

+\$921.4M

In total, through April 2019, Ygrene investments will increase California GSP by \$921.4 million.

GSP Impacts of California Ygrene PACE Financing

Cumulative Lifetime GSP (Millions) through April 2019



Tax Revenue

+\$128.1M

In California, Ygrene investments through April 2019 increased local, state, and federal tax revenues by \$128.1 million as a result of the economic activity from improvements funded by Ygrene PACE.

TOTAL TAX IMPACTS OF CALIFORNIA YGRENE PACE FINANCING (MILLIONS) THROUGH APRIL 2019

	State/Local	Federal	Total
Personal Income Taxes	\$34.27	\$49.34	\$83.61
Indirect Business Taxes	\$19.97	\$2.51	\$22.48
Corporate Income Taxes	\$3.73	\$18.30	\$22.03
Total	\$57.96	\$70.15	\$128.11

Ygrene Has Significantly Improved Florida's Economy

Of the 20 most destructive hurricanes to hit the United States, 17 have occurred since 2000. Of those 20 storms, 40 percent caused catastrophic destruction in Florida.⁸

Rank	Name	Year	Category	Damage (\$B)	Inflated Damage
1	Katrina	2005	3	\$125.0	\$160.0
5	Irma	2017	5	\$50.0	\$50.0
7	Andrew	1992	5	\$27.0	\$47.8
8	Ivan	2004	3	\$20.5	\$27.1
9	Wilma	2005	3	\$19.0	\$24.3
11	Charley	2004	4	\$16.0	\$21.1
14	Frances	2004	2	\$9.8	\$12.9
16	Jeanne	2004	3	\$7.5	\$9.9



\$60,000 Project value

48% Property Insurance Savings

36% Monthly Energy Savings

CASE STUDY

Residential Hurricane Protection & Energy Efficiency Miami Shores, FL

Like many homeowners across the country, Paul Cameau faced rising insurance costs for his home in hurricane-prone Miami Shores, FL. When he decided to upgrade his old HVAC unit, replace his leaking roof, and strengthen the rest of his home against hurricane damage, Dr. Cameau used Ygrene PACE financing, which enabled him to make otherwise financially infeasible home upgrades that will protect his family from hurricane destruction for years to come.

"Living in this hurricane prone region makes home insurance expensive. Ygrene's financing made protecting our home with new impact windows and doors and a new roof affordable. Now our home is protected and we are saving \$3,700 in insurance premiums every year. On top of that, our energy bills went down \$100 every month since we changed our AC. With all of this, our improvements are paying for themselves."

Dr. Paul Cameau Residential Property Owner

Ygrene helps Florida property owners protect against increasing environmental risk.

Ygrene investments in Florida resulted in similar positive economic outcomes to those seen in California. In addition to helping homeowners build resilience against natural disasters, Ygrene projects help grow local economies and increase employment.

Employment

+2,440

Between 2013 and 2018, Ygrene investments created an average of 2,440 job years annually in Florida.

Total Employment Impacts of

Florida Ygrene PACE Financing

Cumulative Job Years Created



Gross State Product (GSP)

+\$157.5M

Between 2013 and 2018, Ygrene investments increased Florida GSP by an average of \$157.5 million per year.

+\$1.1B

In total, through April 2019, Ygrene investments will increase Florida GSP by \$1.1 billion.

GSP Impacts of Florida Ygrene PACE Financing

Cumulative Lifetime GSP (Millions) through April 2019

2013 ♦ \$33.0	MOC
2014 ♦ \$11.62	2M
2015	88M
2016	215.51M
2017	\$562.19M
2018	♦\$945.02M
2019*	\$1.102.33M

Tax Revenue

+\$192.58M

In Florida, Ygrene investments, through April 2019, have increased tax revenue by \$192.58 million.

What impedes most property owners from accessing efficiency, resiliency, or renewable energy upgrades is the cost. While few dispute the benefits of clean energy and disaster resiliency, most financing options are unaffordable to American homeowners who seek to install sustainability upgrades.

TOTAL TAX IMPACTS OF FLORIDA YGRENE PACE FINANCING (MILLIONS) THROUGH APRIL 2019						
	State/Local	Federal	Total			
Personal Income Taxes	\$8.02	\$82.58	\$90.61			
Indirect Business Taxes	\$47.72	\$5.99	\$53.71			
Corporate Income Taxes	\$9.39	\$38.86	\$48.26			
Total	\$65.13	\$127.43	\$192.58			

Environmental Benefits in California

Ygrene PACE improvements are estimated to result in substantial direct benefits from energy efficiency, renewable energy generation, carbon emission reduction, and water conservation.

In California, energy and water efficiency and renewable energy PACE projects completed through April 2019 are estimated to lead to the following:



Water consumption reductions of 3.3 billion gallons

Electricity consumption reductions of 3.73 billion kWh

Natural gas consumption reductions of 3.2 billion cubic feet

When applying state-specific emission factors to energy saving quantities to estimate reductions in CO₂ emissions, Ygrene PACE improvements in California are estimated to result in greenhouse gas emission reductions of 1.2 million metric tons of CO2e, which is equivalent to 254,777 passenger vehicles driven for one year.⁹

Greenhouse gas emission reductions of 1.2 million metric tons of CO2e is equivalent to the following:

254,777 vehicles

Greenhouse gas emissions from 254,777 passenger vehicles driven for one year

153B smartphones

Greenhouse gas emissions from charging 153 billion smartphones

254 wind turbines

Equivalent greenhouse gas emissions reductions from 254 wind turbines operating for one year





21% Energy Savings

CASE STUDY

Commercial Clean Energy at Sandpiper Apartments Sacramento, CA

Ygrene PACE financing enabled the Sandpiper Apartments, an 80-unit apartment community in Sacramento, to lower utility costs, maximize rent, and provide tenants with a more comfortable living environment by completing clean energy upgrades that reduced annual energy costs by 21%.

Environmental Benefits in Florida

Ygrene PACE improvements are powering a more sustainable and resilient future for residents across the state of Florida.

In Florida, energy efficiency and renewable energy PACE projects completed through April 2019 are estimated to lead to the following:



Electricity consumption reductions of 705 million kWh



Natural gas consumption reductions of 380 million cubic feet

Overall, improvements in Florida are estimated to result in greenhouse gas emission reductions of 397,879 metric tons of CO2e, which is equivalent to 84,475 passenger vehicles driven for one year. Greenhouse gas emission reductions of 397,879 metric tons of CO2e is equivalent to the following:

84,475 vehicles

Greenhouse gas emissions from 84,475 passenger vehicles driven for one year

50B smartphones

Greenhouse gas emissions from charging 50 billion smartphones

84 wind turbines

Equivalent greenhouse gas emissions reductions from 84 wind turbines operating for one year



Consumer Protections: The Gold Standard in Home Improvement Financing

The Gold Standard In Home Improvement Financing

PACE has the strongest consumer protections in the home improvement financing market, and Ygrene is the gold standard.

Ygrene's commitment to transparent and flexible financing begins with each consumer's application and continues through project completion, approval, and post-project support.

PACE financing programs have robust and equitable eligibility guidelines throughout the application underwriting and approval process. These guidelines are set forth in state statutes, local government ordinances, and program policies adopted by Ygrene's local government partners. Unlike traditional financing options, PACE financing is based on a property's fair market value and homeowner equity—among other factors—enabling Ygrene to apply more inclusive and equitable underwriting criteria to customers than traditional financing options.

Ygrene PACE consumer protections include comprehensive financial disclosures, confirmation of terms phone calls and strict contractor training and management among a host of others. And, unlike other financing options, Ygrene's consumer protections do not end when the contract is signed. Ygrene stays in communication with property owners through the duration of the project, assisting property owners, resolving contractor issues, and ensuring that every project is finalized. Additionally, Ygrene does not pay anything to the contractor until the project is complete and signed off on by the property owner.

It is consumer protection practices like these that have made Ygrene a leader in the industry. Ygrene implements these levels of consumer protections even when not required by state law. In some cases, municipalities have followed Ygrene's lead and adopted local ordinances based on Ygrene practices.

Comparing PACE To Other Home Improvement Financing Solutions

Ygrene focuses on putting the customer first: providing homeowner and community-wide protections that go above and beyond other financing options.

Ygrene's commitment to consumer protections are reflected in how well customers review and recommend Ygrene. Since Ygrene began surveying customers in 2017, it has received one of the highest Net Promoter Scores (NPS) (a score indicating how likely a customer is to recommend a company) in the financial services industry. Ygrene, and PACE in general, delivers exceptional customer satisfaction resulting in some of the lowest complaint rates in the home improvement marketplace. Ygrene's customer complaint rate is less than 2%. In fact, no payments are released to contractors until Ygrene customers confirm their satisfaction and sign off on their project.

60.86 NPS Score

Ygrene has one of the highest NPS scores in the financial services industry.

PACE CONSUMER PROTECTIONS COMPARED TO OTHER HOME IMPROVEMENT FINANCING OPTIONS				
	PACE	HEL/ HELOC	Unsecured Debt	Lease/ PPA
Minimum level of equity & loan to value limit	•	•		
Not deliquent on property related debt	•	•		
Not in bankruptcy	•			
Term tied to useful life of improvement	•			•
Confirmation of terms call	•			
"Know Before You Owe" financial disclosure	•	•		
Pre/post-funding customer report	•			•
Improvement pricing review	٠			

Essential Public Policy: Protect And Expand PACE

The Need to Protect and Expand PACE Financing Availability

PACE enables property owners to protect their families, homes, and businesses from increasingly extreme weather events and a changing climate by investing in disaster resiliency and clean energy upgrades.

Since 2013, Ygrene has invested \$1.58 billion by funding over 66,000 projects in California, Florida and Missouri. Both the environmental and economic impacts are undeniably positive. However, residential PACE is available only in those three states (and most recently Ohio) — meaning millions of Americans remain without access to potentially life-saving upgrades.

Today, no American is safe from natural disasters. Upgrading properties to be more resilient and sustainable is a necessity. If expanded throughout the United States, PACE could have an even more significant impact on the economy, environment, and livelihoods of millions of Americans.

In 2017, the Federal Emergency Management Agency (FEMA) spent more than \$7 billion in public disaster assistance for over five million households. The two most notable disasters in 2017 were hurricane's Harvey and Irma, two major hurricanes that hit the continental United States in the same year causing more than \$175 billion in damage.¹⁰ Additionally, the National Flood Insurance Program (NFIP) paid out more than \$8 billion in flood insurance claims in 2017 alone.¹¹

By unlocking billions of dollars in private capital to invest in home and business improvements, PACE could save the American public billions in avoided disaster recovery costs, which currently are borne in large part by FEMA. But the growing need for building improvements across the country does not stop at disaster resilience.

The need for nationwide adoption of increasing energy efficiency, renewable energy, water conser-

vation, and carbon emission reductions is of paramount importance.

Twenty-nine states have a Renewable Portfolio Standard (RPS) that establishes statewide renewable energy adoption and utilization targets. Further, 31 states across the county and countless local governments have adopted a Climate Action Plan (CAP) or are engaged in some form of climate action planning. In order to meet the goals of these jurisdictions to reduce statewide and local carbon emissions, a massive national investment effort will be required.

A recent report by the Deep Decarbonization Pathways Project calculated that it may take annual investments of \$1 trillion by 2050 to achieve deep decarbonization of the U.S. economy.¹² That investment could create tremendous economic opportunities for the U.S.

The need for innovative market-based policy solutions is crucial to moving the United States into the clean energy economy of the future. Without policies and financing models like PACE, the ability to achieve these goals—and by extension the ability to ensure economic and environmental prosperity for generations to come—will be significantly hindered.

Simply put, the country needs PACE—and policies like it—to have a chance at shepherding in the clean energy economy of the 21st century. It will take a PACE enabled world to achieve a healthy, resilient, and environmentally prosperous economy – for this and every generation to come.

End Notes

- 1 The total projected impact was derived by taking the decadal data (www.ncdc.noaa.gov/ billions/) between 1980-2010 and applying the standard percent increase decade-over-decade of all the storm factors to conclude the total impact of extreme weather events through 2050
- 2 NOAA National Centers for Environmental Information (NCEI), U.S. Billion-Dollar Weather and Climate Disasters (2019). https://www.ncdc.noaa.gov/billions/
- 3 ValuePenguin, Average Cost of Homeowners Insurance (2019). https://www.valuepenguin. com/average-cost-of-homeowners-insurance
- 4 The projections are determined by calculating the individual impacts per project for all Ygrene funded projects based on the University of Southern California Schwarzenegger Institute's study, "Impacts of the Property Assessed Clean Energy (PACE) Program on the Economies of California and Florida," utilizing in part Ygrene's proprietary impact model, and then applying the individual impact factors to various numbers of hypothetical projects and subsequently scaling the total impacts across those various projections.
- 5 Myers, Joel, Dr. (2019, July 5) AccuWeather, AccuWeather predicts 2018 wildfires will cost California total economic losses of \$400 billion. https://www.accuweather.com/en/weather-news/accuweather-predicts-2018-wildfires-will-cost-california-total-economic-losses-of-400-billion/70006691
- 6 Dixon, Lloyd, Flavia Tsang, Gary Fitts. (GreenwareTech and RAND Corporation) 2018. The Impact of Changing Wildfire Risk on California's Residential Insurance Market. California's Fourth Climate Change Assessment, California Natural Resources Agency. Publication number: CCCA4-CNRA-2018-008.
- 7 Rose, Adam Ph.D; Wei, Dan Ph.D, USC Price School Of Public Policy (2019, March 6) Impacts of the Property Assessed Clean Energy (PACE) Program on the Economies of California and Florida.
- 8 NOAA National Hurricane Center (NCH), Costliest U.S. tropical cyclones tables updated (2018). https://www.nhc.noaa.gov/news/UpdatedCostliest.pdf
- 9 Environmental Protection Agency (EPA), Greenhouse Gas Equivalencies Calculator (2018). https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator
- 10 NOAA Office Of Coastal Management, Hurricane Costs. https://coast.noaa.gov/states/fastfacts/hurricane-costs.html
- 11 Insurance Journal, Disasters Affected 8% of U.S. Population in 2017, FEMA Notes in Review of Historic Year (2018). https://www.insurancejournal.com/news/national/2018/01/03/476001. htm
- 12 Williams, J.H., B. Haley, R. Jones (2015). Policy implications of deep decarbonization in the United States. A report of the Deep Decarbonization Pathways Project of the Sustainable Development Solutions Network and the Institute for Sustainable Development and International Relations. Nov 17, 2015.





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