



# Cleantech Forum San Francisco

San Francisco | January 22-24, 2018



Cleantech Forum  
**San Francisco**

# The Rising Stars



# Cleantech Forum | **San Francisco**

## The Rising Stars



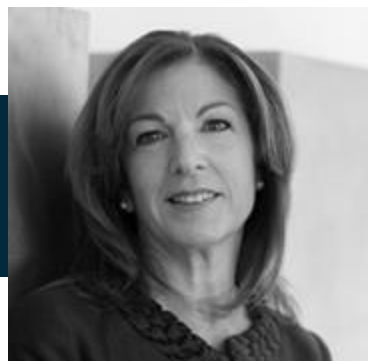
MODERATED BY  
**GINA DOMANIG**

Managing Partner, Emerald Technology Ventures

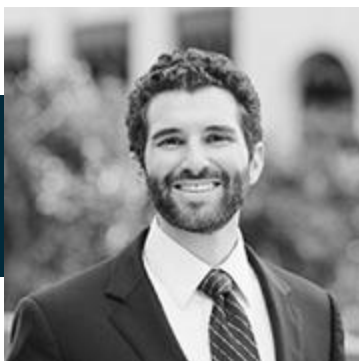


# Cleantech Forum | San Francisco

## The Rising Stars



**MODERATOR:  
GINA DOMANIG**  
Managing Partner,  
Emerald  
Technology  
Ventures



**BRENDEN  
MILLSTEIN**  
CEO, Carbon  
Lighthouse



**ALEXANDRE  
ZANGHELLINI**  
Co-Founder &  
CEO, Arzeda



**BENJAMIN  
HERNANDEZ**  
CEO & Co-  
Founder, Numat  
Technologies



**YOAV LURIE**  
CEO & Co-  
Founder, Simple  
Energy



**DAVIDA HERZL**  
CEO, Aclima





# Cleantech Forum | **San Francisco**

## The Rising Stars



**BRENDEN MILLSTEIN**  
CEO, Carbon Lighthouse

# Carbon Lighthouse

Brenden Millstein, CEO





An aerial, high-angle photograph of a city street grid, likely in New York City, showing several large, multi-story buildings. The image is tilted at a 45-degree angle. A dark, semi-transparent horizontal band runs across the center of the image, containing the text "Capitalism will save the planet" in white, sans-serif font.

Capitalism will save the planet



# Inspired by Big Oil...



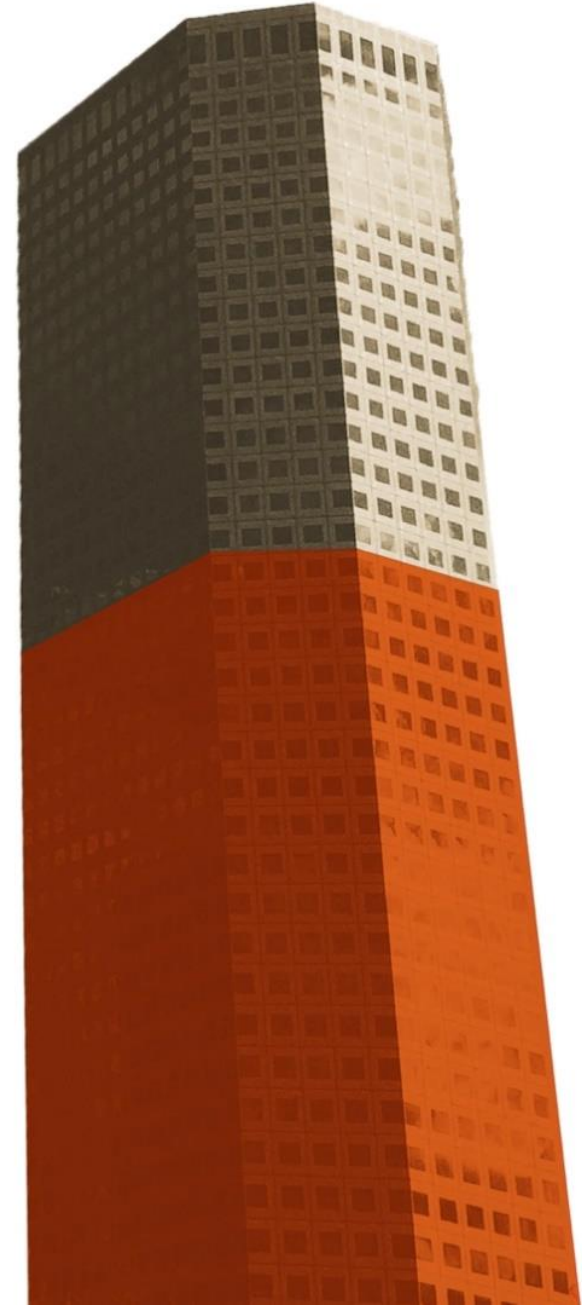


# Potential energy value

## \$100 Billion

Conservative estimate based on today's prices & technology

Up to a 55%  
“Efficiency Reserve”





**Efficiency Production  
delivers 10%-30%  
energy savings**





\$1.7 million lifetime savings

No upfront investment

# Impact

$$\text{Building Value} = \frac{\text{NOI}}{\text{cap rate}}$$

# Impact

$$\text{Building Value} = \frac{\text{NOI}}{\text{cap rate}}$$

$$\frac{\$0.50}{0.05 \text{ cap rate}} = \frac{\$10}{\text{sqft}}$$

# Carbon Emissions

0.03 tons  
sqft

# Financial Value

\$10  
sqft

# Carbon Emissions

# Financial Value

0.03 tons  
sqft

\$10  
sqft

100,000 sqft

= 3,000 tons eliminated

= \$1,000,000 value

# Carbon Emissions

1,000  
buildings

= 3,000,000 tons  
eliminated

# Financial Value

= \$1,000,000,000 value



# Carbon Emissions

1,000  
buildings

= 3,000,000 tons  
eliminated

1,000  
cities

= 3,000,000,000 tons  
eliminated

# Financial Value

= \$1,000,000,000 value

= \$1,000,000,000,000  
value



# Cleantech Forum | **San Francisco**

## The Rising Stars



**ALEXANDRE ZANGHELLINI**  
Co-Founder & CEO, Arzeda

A stylized graphic element consisting of several concentric, dashed circular arcs in shades of gray, positioned behind the word 'Arzeda.'

# Arzeda.

**THE PROTEIN DESIGN  
COMPANY™**

**Alexandre Zanghellini  
Co-founder, President & CEO**





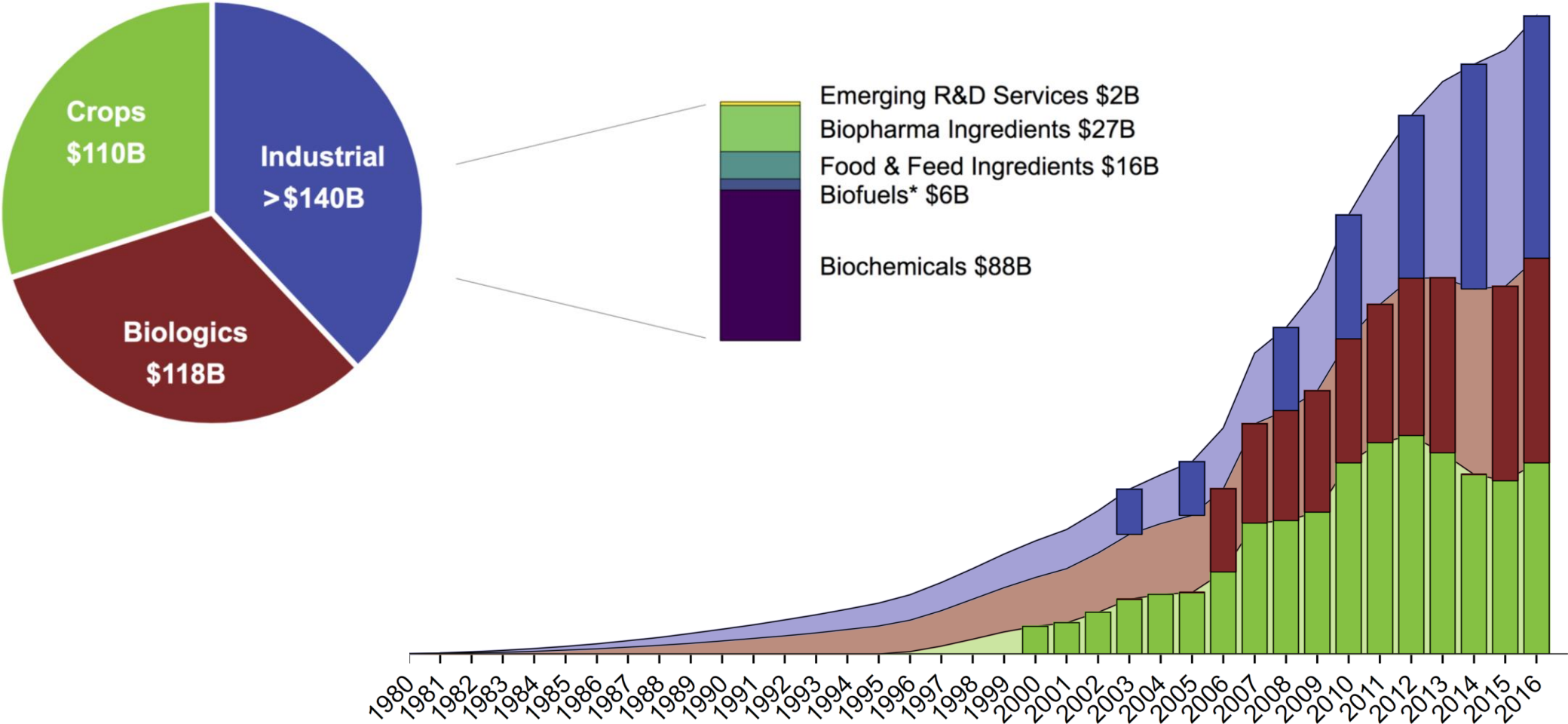




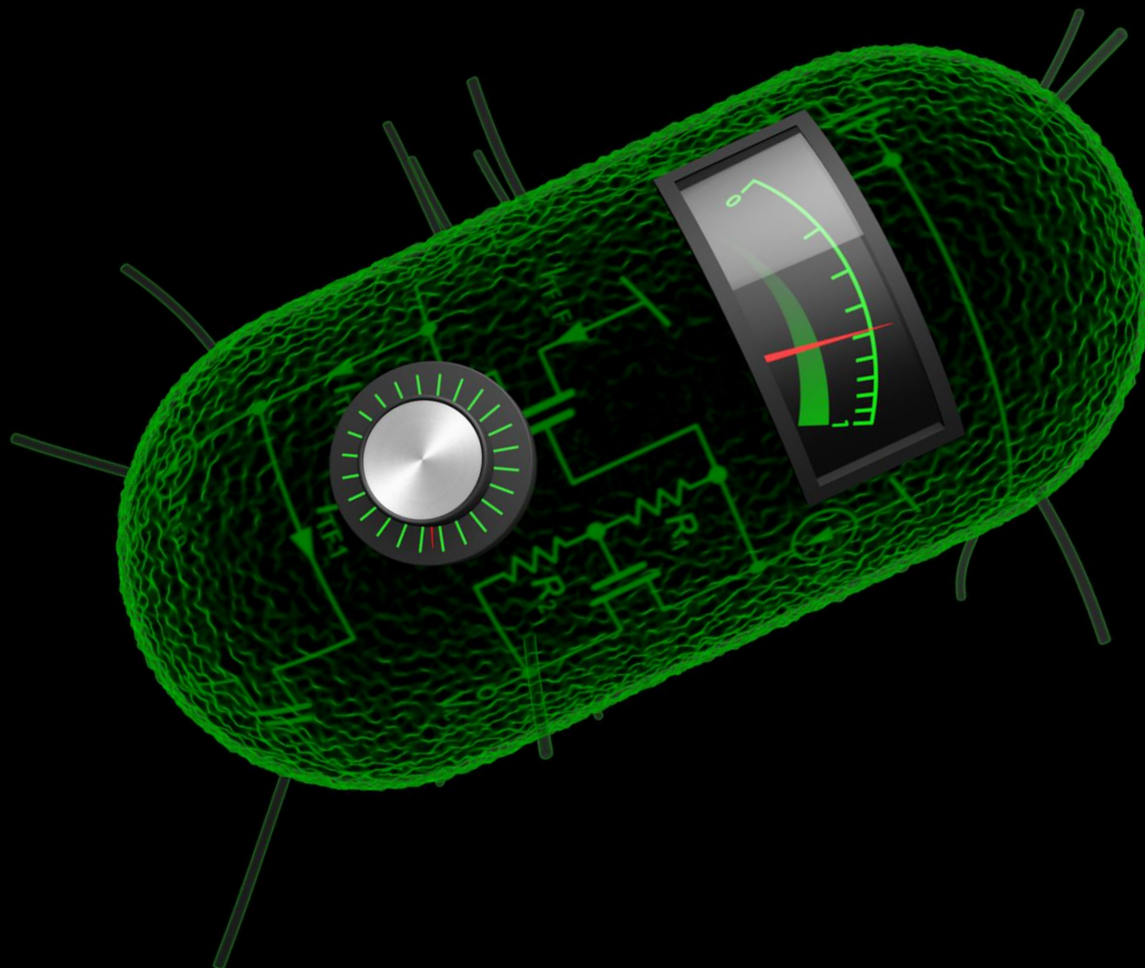




# Estimated Biotechnology Revenues 1980 - 2016



Source: Bioeconomy Capital (Arzeda Series A Investors)



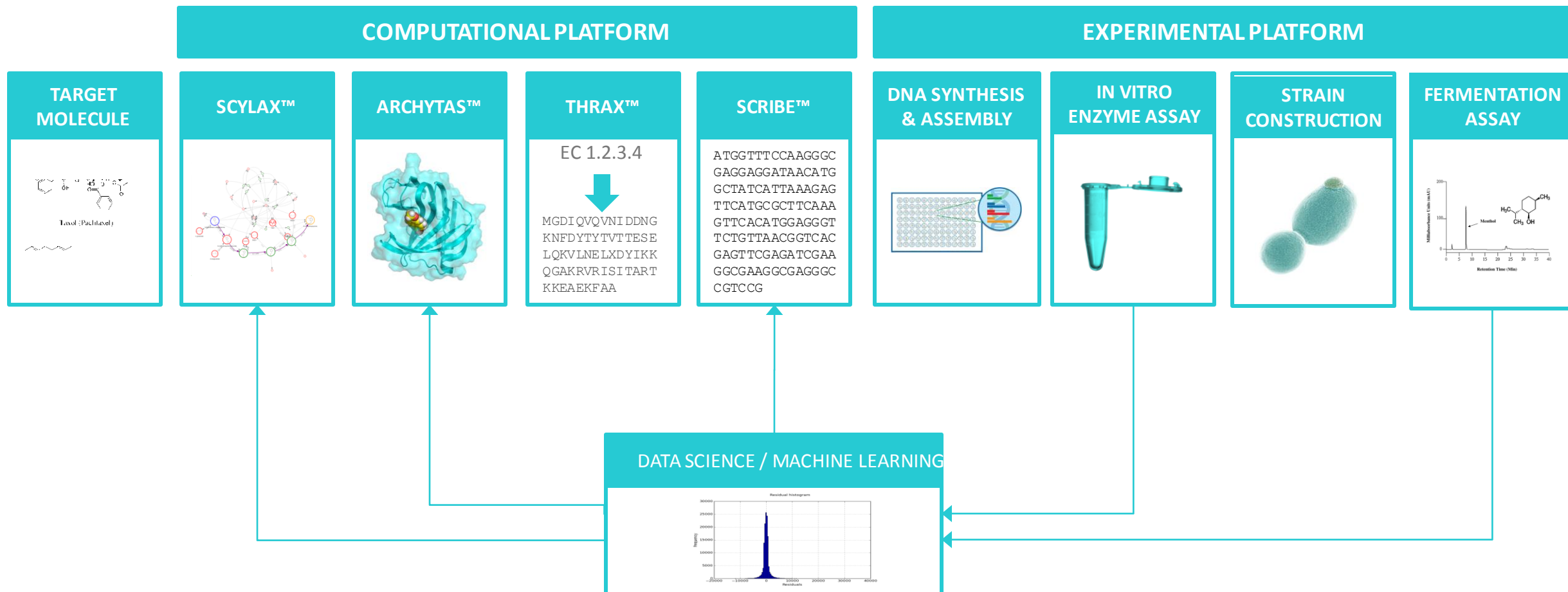
$10^{25} =$  Drops in the Pacific Ocean

$>>10^{32} =$  Sequences to Design a New Protein (Gene) Function

This can only be achieved with big and smart compute !!

# ARZEDA'S TECHNOLOGY

From Bits to Molecules



# A PEER-REVIEWED SYNTHETIC BIOLOGY TECHNOLOGY

## Science

### Computational Design of an Enzyme Catalyst for a Stereoselective Bimolecular Diels-Alder Reaction

Justin B. Siegel<sup>1,2,\*</sup>, Alexandre Zanghellini<sup>1,2,\*†</sup>, Helena M. Lovick<sup>3</sup>, Gert Kiss<sup>4</sup>, Abigail R. Lambert<sup>5</sup>, Jenn...

## nature

### Global analysis of protein folding using massively parallel design, synthesis, and testing

Gabriel J. Rocklin<sup>1</sup>, Tamuka M. Chidyausiku<sup>1,2</sup>, Inna Goreshnik<sup>1</sup>, Alex Ford<sup>1,2</sup>, Scott Houliston<sup>3,4</sup>, Alexander Lemak<sup>3</sup>, L...

## Science

### Principles for designing proteins with cavities formed by curved $\beta$ sheets

Enrique Marcos<sup>1,2,3,\*</sup>, Benjamin Basanta<sup>1,2,4,\*</sup>, Tamuka M. Chidyausiku<sup>1,2,4</sup>, Yuefeng Tang<sup>5,6</sup>, Gustav Oberdorfer<sup>1,2,7</sup>, Gao...

## nature

### The coming of age of *de novo* protein design

Po-Ssu Huang, Scott E. Boyken & David Baker

## Science

### Protein structure determination using metagenome

## nature

### Kemp elimination catalysts by computational enzyme design

Daniela Röthlisberger<sup>1,2</sup>, Olga Khersonsky<sup>4,2</sup>, Andrew M. Wollacott<sup>1,2</sup>, Lin

## Science

### De Novo Computational Design of Retro-Aldol Enzymes

Lin Jiang<sup>1,2,\*</sup>, Eric A. Althoff<sup>1,\*</sup>, Fernando R. Clemente<sup>4</sup>, Lindsey Doyle<sup>5</sup>, Daniela Röthlisberger<sup>1</sup>, Alexandre Zanghellini<sup>1,2</sup>, Jas...







## Arzeda Officially Closes Series A with Total \$15.2 Million to Revolutionize Chemical Production with Protein Design

Oversubscribed financing will expand capacity and accelerate commercialization of products developed with Arzeda's technology



Like 25



Share

12



Tweet

*Pinit*



Share

November 28, 2017 14:33 ET | Source: Arzeda

SEATTLE, Nov. 28, 2017 (GLOBE NEWSWIRE) -- [Arzeda](#), The Protein Design Company™, today announced that it has officially closed its Series A funding round with a total investment

### Profile

Arzeda



[Subscribe via RSS](#)



# SCALING UP PROTEIN DESIGN FOR SYNTHETIC BIOLOGY

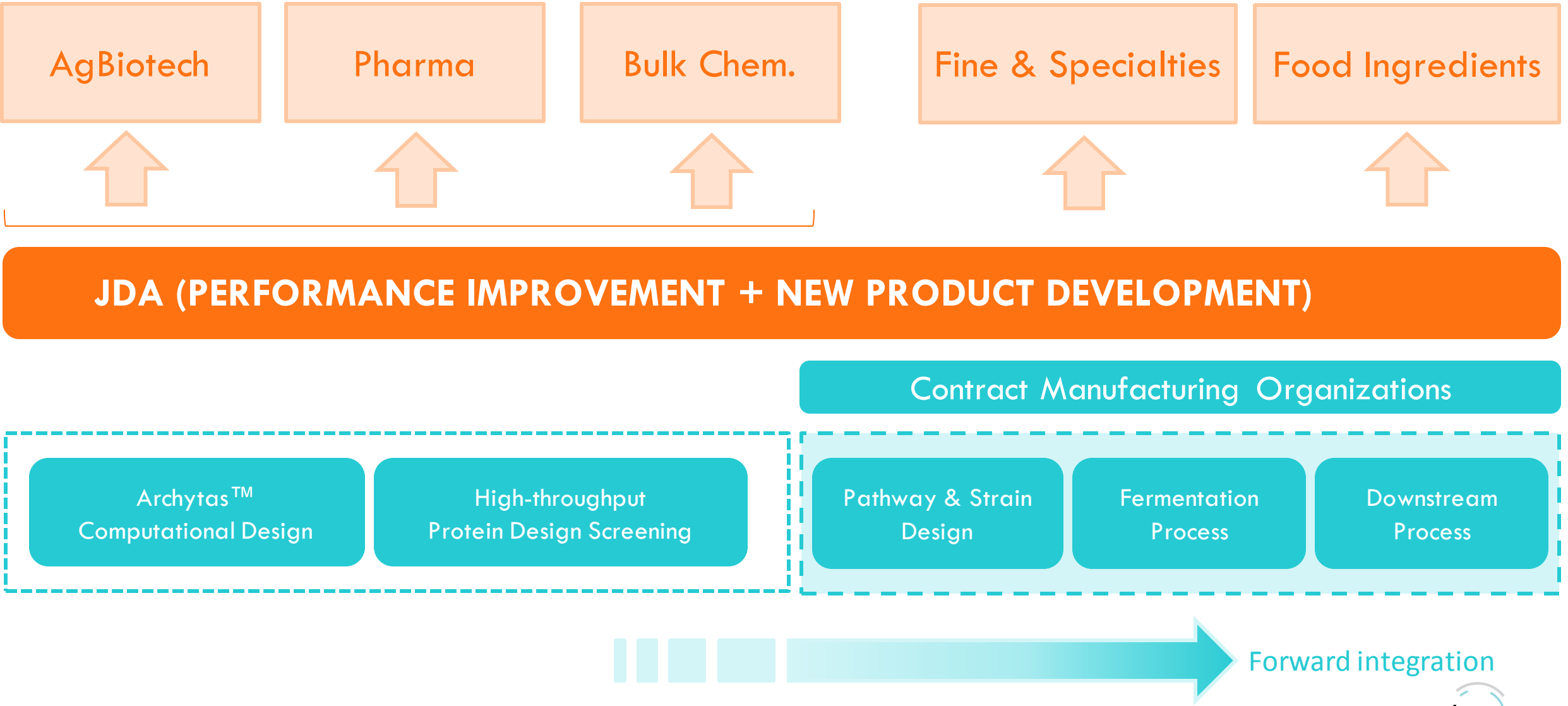


**Scalable cloud deployment** - 5,000 cores ( Q1 2018 )

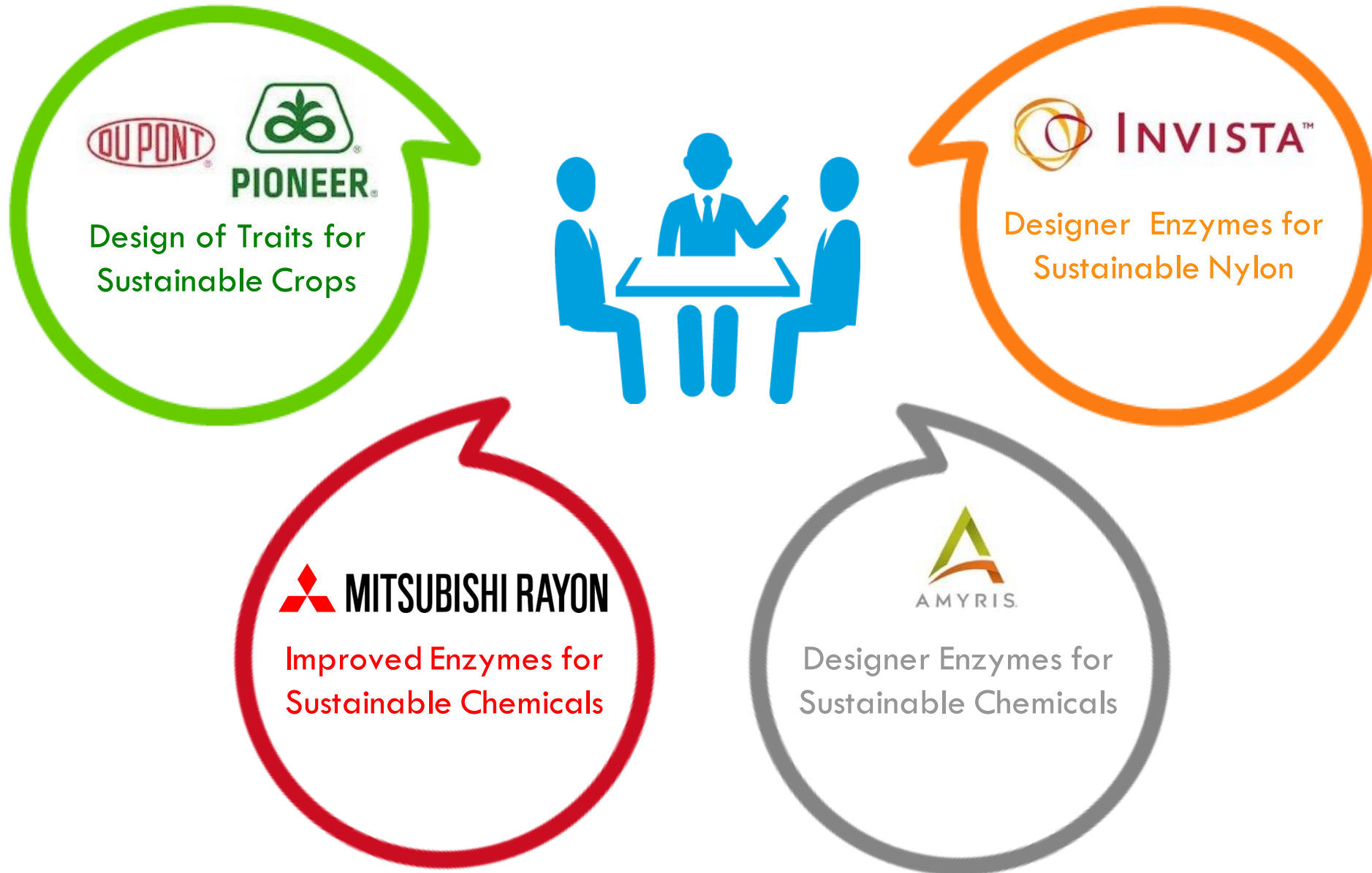
**High-throughput protein screening platform** - 20,000/wk ( Q4 2018 )

**Data Science and Automation Infrastructure** - LIMS/data science platform up ( Q3 2018 )

**BUSINESS MODEL: TECHNOLOGY DEVELOPER**



## A SHORT-LIST OF OUR INDUSTRIAL SUCCESSES







**Arzeda.**  
THE PROTEIN DESIGN COMPANY™

**Thank You**

Alexandre Zanghellini, CEO

[az@arzeda.com](mailto:az@arzeda.com)

[@ArzedaCo](https://twitter.com/ArzedaCo)



# Cleantech Forum | **San Francisco**

## The Rising Stars



**YOAV LURIE**

CEO & Co-Founder, Simple Energy





SIMPLE  
energy




















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# MAKE 2018 YOUR MOST EFFICIENT YEAR YET

Shop Smart Thermostats

FEATURED PRODUCTS









# PROMISE





LOVE





CAN A UTILITY  
LOVE  
ITS CUSTOMERS?



CAN A UTILITY  
EMPOWER  
ITS CUSTOMERS?







CAN A UTILITY  
MOTIVATE  
ITS CUSTOMERS?





CAN A UTILITY

**INSPIRE**

ITS CUSTOMERS?



YES!



A woman and a young girl are smiling and looking at a smartphone together in a kitchen. The woman is holding the phone, and the girl is pointing at the screen. The background shows a kitchen sink and a tiled wall.

IF A UTILITY CAN  
**CONNECT**  
WITH CUSTOMERS

from

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it. It's also  
Everybody lo  
things about ou  
Time Best Head

In my last lectu  
understanding of th  
the Promised Land bu  
way about all the success

I wanted my lecture to be a call to my colleagues and stu-  
dents to go on without me, and to know I have confidence  
that they will do great things. (You can keep tabs on their  
progress at [www.alice.org](http://www.alice.org).)

Through Alice, millions of kids are going to have incredi-  
ble fun while lea hard. They'll be living  
that could help dreams. If I have to die,  
I am comforted by a professional legacy.  
So it's OK that I'm in the Promised Land. It's  
still a wonderful sight.

from  
them  
called

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elleher) is devel-  
young girls get  
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fact, they love  
the boys off.  
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wins the All-

have a better  
he got to see  
in it. I feel that

## V

# COMMON MYTHS ABOUT UTILITIES

# 1. IT'S THE CULTURE

## COMMON MYTHS ABOUT UTILITIES



# ~~1. IT'S THE CULTURE~~

## 2. LACK OF COMPETITION

COMMON  
MYTHS  
ABOUT  
UTILITIES

~~1. IT'S THE CULTURE~~

~~2. LACK OF COMPETITION~~

3. POOR LEADERSHIP

COMMON  
MYTHS  
ABOUT  
UTILITIES

~~1. IT'S THE CULTURE~~

~~2. LACK OF COMPETITION~~

~~3. POOR LEADERSHIP~~

4. DATA AND BUSINESS SILOS

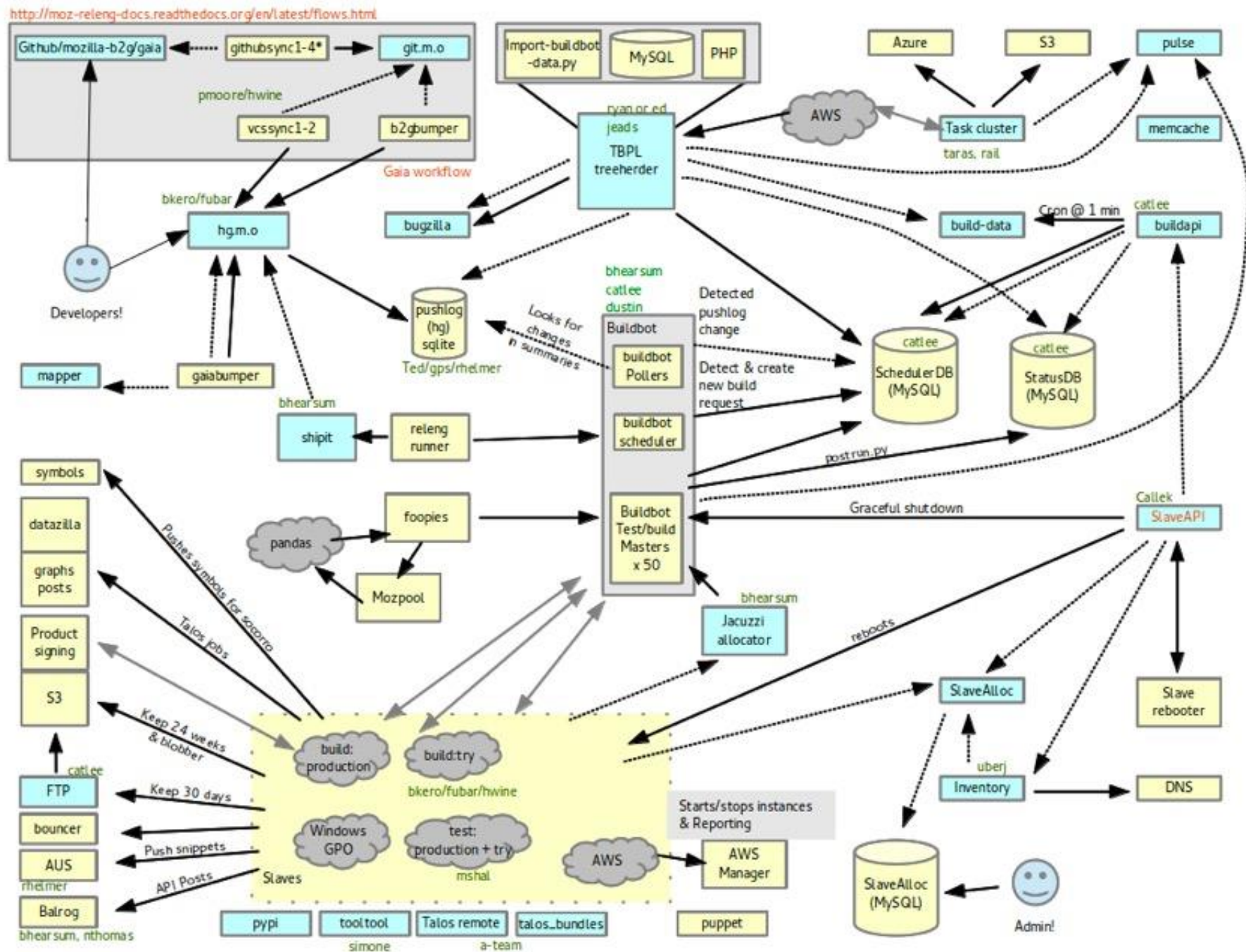


LEGAL

+ MARKETING

+ REGULATORY AFFAIRS

+ IT



**LEVEL 1  
INTERCONNECTION REQUEST APPLICATION FORM AND  
DISTRIBUTED GENERATION INTERCONNECTION AGREEMENT  
(For Lab-Certified Inverter-Based Distributed Generation Facilities 20 kVA or less)**

**INSTRUCTIONS:**

1. \*Indicates required information.
2. Mail completed form with \$125 application fee to the appropriate utility company. If the utility performs a witness test as specified under 199 IAC 45.5(10), the utility may charge the interconnected customer an additional cost-based fee of no more than \$125.

| INTERCONNECTION CUSTOMER CONTACT INFORMATION  |                     |  |                |      |  |
|---|---------------------|--|----------------|------|--|
| *Owner / Company (Legal Entity Name)  |                     |  | *Contact Name  |      |  |
| *Mailing Address  |                     | *City  | *State         | *Zip |  |
| *Phone No. (Daytime)  | Phone No. (Evening) | Facsimile No.  | *Email Address |      |  |
| ALTERNATE CONTACT INFORMATION (if different from Customer Contact Information)  |                     |  |                |      |  |
| Owner / Company (Legal Entity Name)   |                     |  | Contact Name   |      |  |
| Mailing Address   |                     | City   | State          | Zip  |  |
| Phone No. (Daytime)   | Phone No. (Evening) | Facsimile No.  | Email Address  |      |  |
| EQUIPMENT CONTRACTOR  |                     |  |                |      |  |
| *Name   |                     |  | *Contact Name  |      |  |
| *Mailing Address  |                     | *City  | *State         | *Zip |  |
| *Phone No. (Daytime)  | Phone No. (Evening) | Facsimile No.  | *Email Address |      |  |
| ELECTRICAL CONTRACTOR (if different from Equipment Contractor)  |                     |  |                |      |  |
| Name  |                     |  | Contact Name   |      |  |
| Mailing Address   |                     | City   | State          | Zip  |  |
| Phone No. (Daytime)   | Phone No. (Evening) | Facsimile No.  | Email Address  |      |  |
| License No. (if applicable)   |                     | Active License? (if applicable)<br><input type="checkbox"/> YES <input type="checkbox"/> NO    |                |      |  |
| ELECTRIC SERVICE INFORMATION FOR CUSTOMER FACILITY WHERE GENERATOR WILL BE INTERCONNECTED   |                     |  |                |      |  |
| *Capacity (Service Entrance)<br>(Amps)  | Voltage<br>(Volts)  | *Type of Service<br><input type="checkbox"/> Single Phase <input type="checkbox"/> Three Phase |                |      |  |
| If 3 Phase Transformer, indicate type:<br>Primary Winding <input type="checkbox"/> Wye <input type="checkbox"/> Delta Secondary Winding <input type="checkbox"/> Wye <input type="checkbox"/> Delta |                     | Transformer Size   | Impedance      |      |  |
| *Does this application require a group interconnection study?   |                     | <input type="checkbox"/> YES <input type="checkbox"/> NO                                       |                |      |  |
| *Is this project an expansion of a current distributed generation facility?   |                     | <input type="checkbox"/> YES <input type="checkbox"/> NO                                       |                |      |  |
| APPLICANT OWNERSHIP INTEREST (check one)  |                     |  |                |      |  |
| <input type="checkbox"/> Owner <input type="checkbox"/> Lease <input type="checkbox"/> 3 <sup>rd</sup> Party PPA <input type="checkbox"/> Other (Please explain)                                    |                     |  |                |      |  |

considered by the interconnection  
owner's insurance. The  
if general liability policy.

line and each electrical device and

geographic markers (i.e. section pin,

by reference; (2) I hereby agree to  
n provided in this application

ix) Date

d Interconnection Agreement; (2) the  
ed and returned to the utility when

y's dated conditional agreement to  
ther force and effect.

**ATION FACILITY**

request is complete. Interconnection of  
Agreement, the return of the attached

Date

199 IAC 15.11(5) and the utility's net

pursuant to Iowa Utilities Board rule 199

than 100 milliseconds).

\*State \*Zip

No. (existing utility customers)

connection of Distributed Generation

(recognized testing laboratory, e.g. UL)

(AC Volts)

(facing)

from the utility as soon as aware of the

ts Volts

Open Circuit Voltage (if applicable)

Volts

W/

Amps

**EMENT**

construct (including operational  
interconnect a distributed

eration facility and interconnect

the distributed generation  
distributed generation facility

the Certificate of Completion  
as well as an inspection form from  
ased inspection.

the planned commissioning test  
st, the utility may, upon  
ted generation facility to ensure  
rdence with the requirements of

issioning test or such other time  
ity cannot do so for good cause.  
late for the test within ten

terconnection customer the

e with the requirements of the  
197, Standard 1547 (2003)  
applicable federal, state, or local  
yity having jurisdiction.

upment of the distributed  
to using its right of access.

the Iowa Utilities Board under

ing conditions, but must

manner as utility's load

nt of the applicable requirements

tional Recognized Testing

g; or

's directors, officers, employees,  
dent resulting from the  
of its distributed generation  
if this Agreement. The utility  
tors, officers, employees, and  
resulting from the utility's  
es or electric distribution system,

owner's insurance policy or

y or expense, including  
Agreement, shall be limited to  
arty for any indirect, incidental,  
shall death, bodily injury or third

e following conditions:

ion Agreement by providing  
generation facility, the

customer if the interconnection  
er notice, or such other date as  
rod. The termination date may  
sion from the utility.

authorization from the utility  
tion system. If the  
the utility shall have the right to

to disconnect its facilities or

ement that cannot be resolved  
chapter 45 rules on Electric

his Agreement and each of its  
d to affect any other agreement

allow or require either Party to

minate upon the transfer of  
ns the Agreement to the new  
so notifies the utility in writing

ms used in Iowa Utilities Board

ctronic means such as E-mail.  
ly written notice, demand or  
eth receipt is confirmed after the  
ass mail, postage prepaid, return

connection customer's  
ange in the contact party

a for notifying the interconnection

State Zip  
IA 52808

midamerican.com

terconnection customer as a

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5  
scription of the

PG elections:





YOUR ENERGY SAVINGS  
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# INCREASED REBATE

For a limited time only, save up to **\$75** instantly on a Wi-Fi thermostat.

**BUY NOW**



## FEATURED ENERGY-SAVING PRODUCTS

# Simple Energy Connect Platform

## Utility Source Systems

Meter Data (MDM)

Customer Data  
(CIS)

Premise Data

Structured and  
Unstructured Data

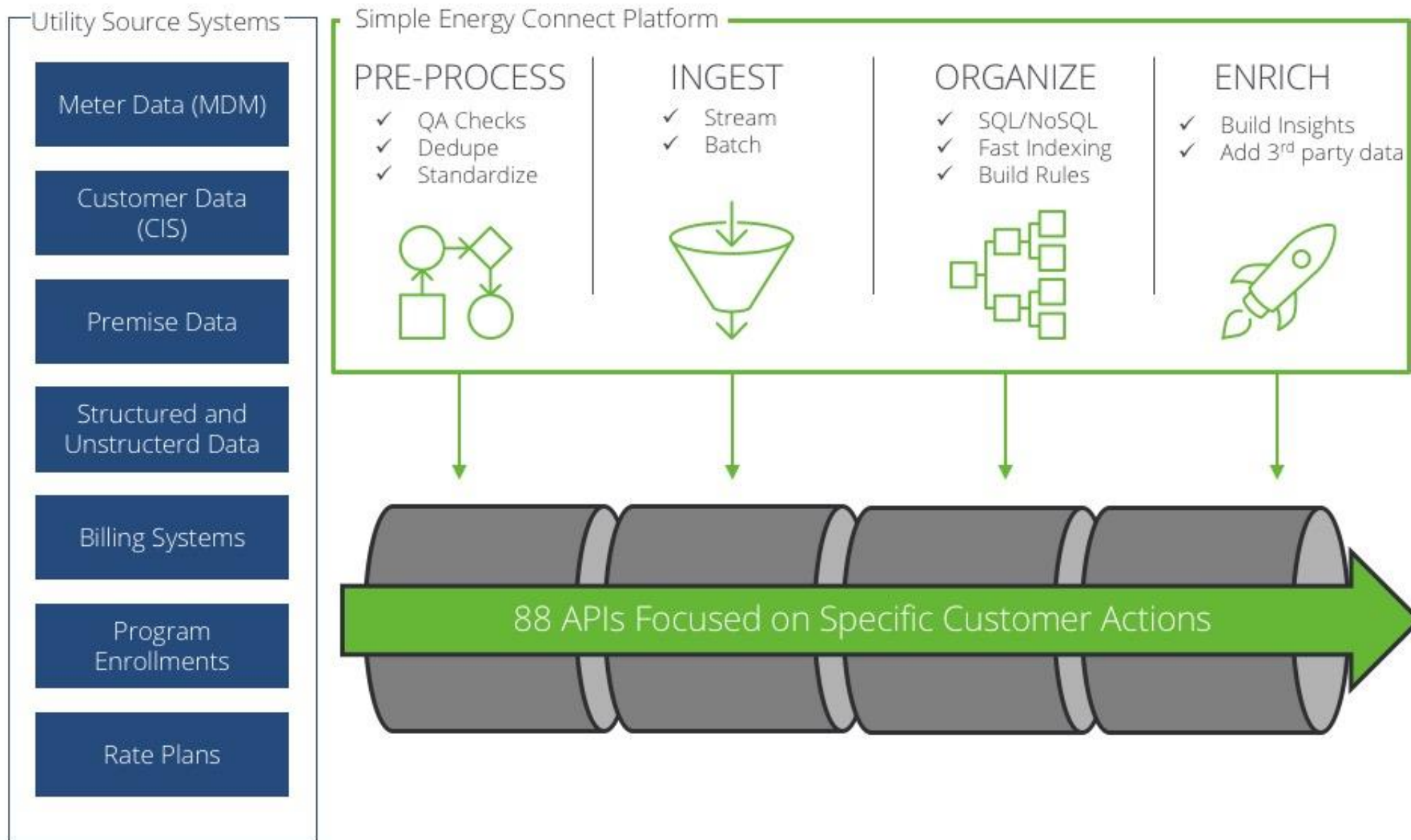
Billing Systems

Program  
Enrollments

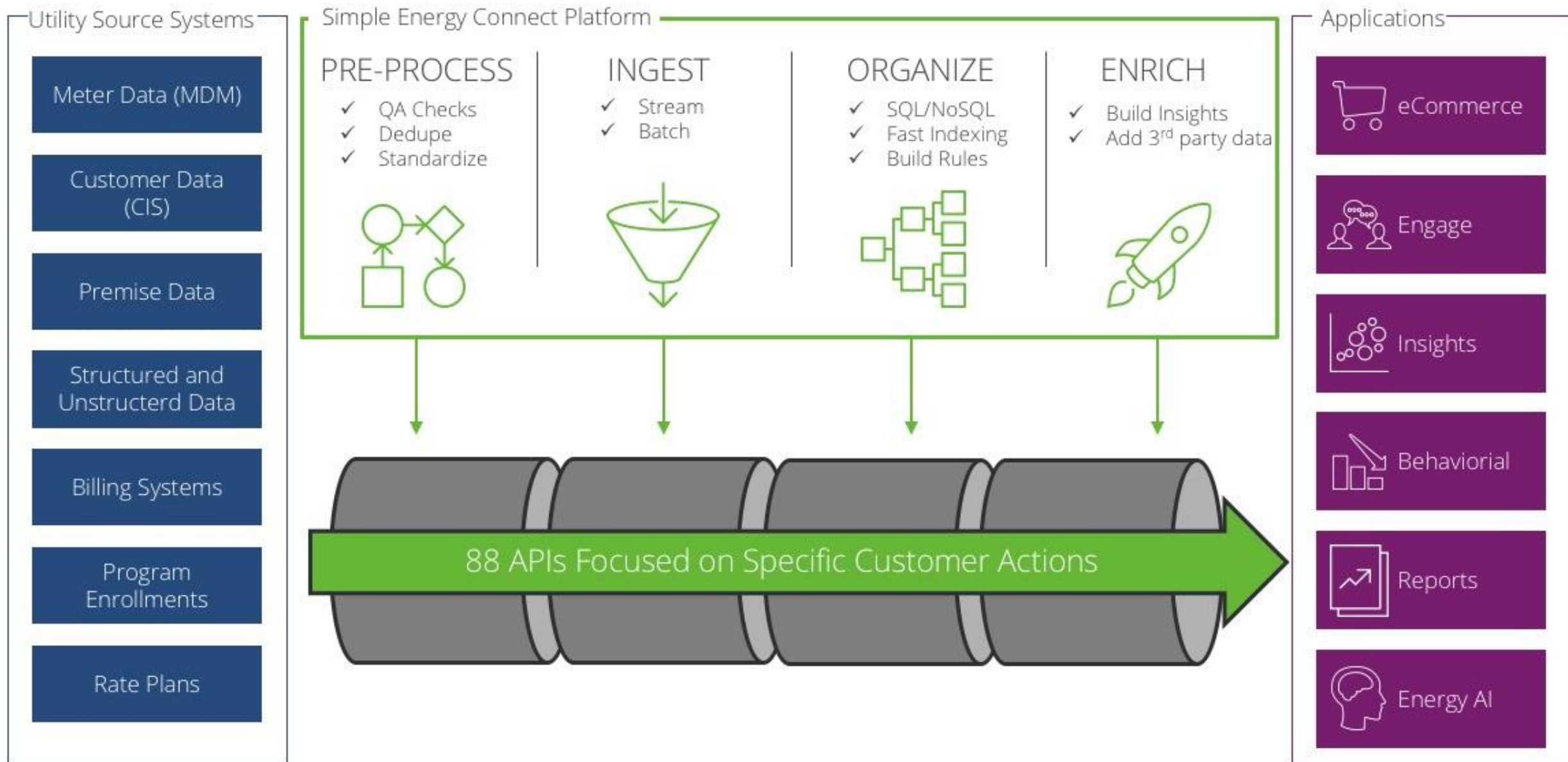
Rate Plans



# Simple Energy Connect Platform



# Simple Energy Connect Platform





# We do the work. You get the savings.

Schedule an Xcel Energy Home Energy Squad visit to make on-the-spot energy efficiency improvements.



## HOME ENERGY SQUAD COLORADO

Not a Colorado Resident? [Click here.](#)

Does your home have inefficient incandescent bulbs, an old thermostat and/or leaky doors? The Home Energy Squad can fix these in one visit—quickly, efficiently and affordably.

For just \$75, the Home Energy Squad will come to your home and work with you to make it more efficient. We'll do things like swap out traditional bulbs for LEDs, install a programmable thermostat,

Your installation will include the following:

- ✓ LEDs
- ✓ Programmable thermostat
- ✓ Weather stripping for an external door
- ✓ High-efficiency showerheads
- ✓ Kitchen and bathroom faucet aerators



Open until 10PM!  
Louisville Lowe's

mylowes  
Sign in



## Departments

Holiday Decorations

Appliances

Bathroom

Building Supplies

Doors & Windows

Electrical

Flooring

Hardware

Heating & Cooling

Home Decor & Furniture

Kitchen

Lawn & Garden

Lighting & Ceiling Fans

Moulding & Trim

Outdoor Living

nest



### RECOMMENDED SEARCHES FOR YOU

EVAPORATIVE COOLERS

AIR CONDITIONER

PORTABLE A/C

DEHUMIDIFIERS

WIN >

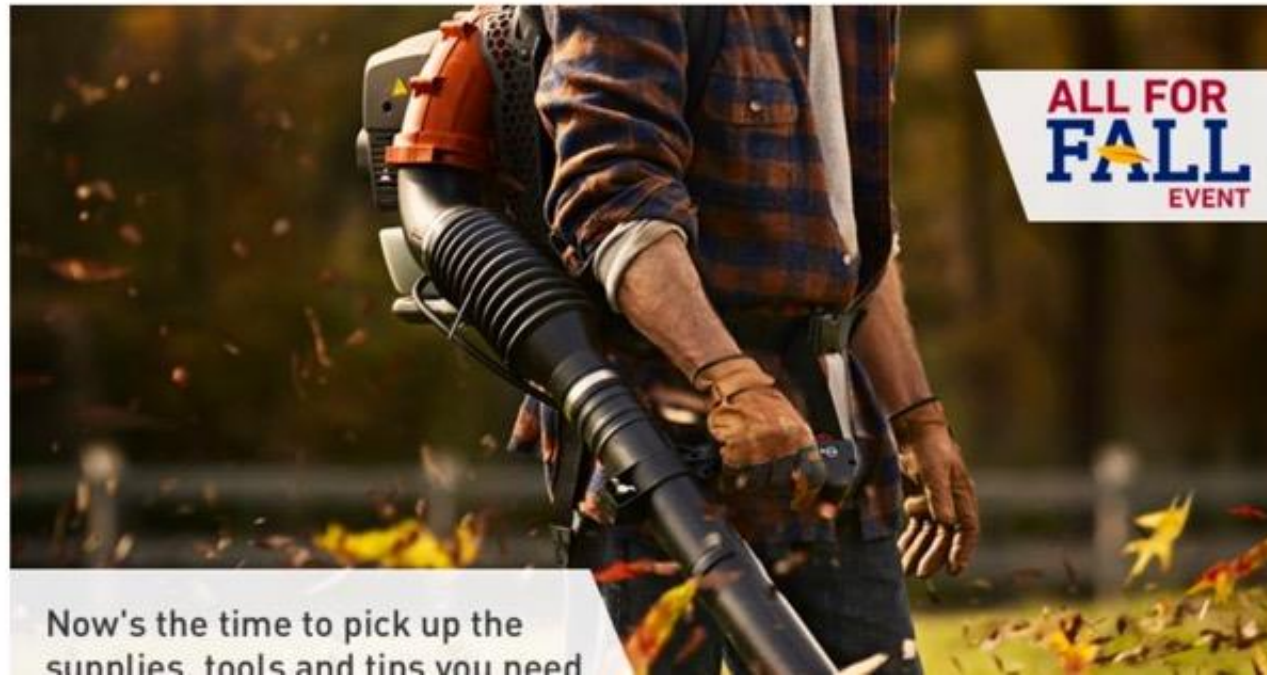


**American  
Red Cross**

**Support Disaster Relief**

Make a difference with your contribution today.

**DONATE NOW**



Now's the time to pick up the  
supplies, tools and tips you need



# DOES IT WORK?

We reach 25 million households across these utilities:



# Cumulative Energy Savings

Gigawatt Hours

1,500



1,000,000 METRIC  
TONS OF CO<sub>2</sub>

1,000



250,000 METRIC  
TONS OF CO<sub>2</sub>

500



100,000 METRIC  
TONS OF CO<sub>2</sub>

0

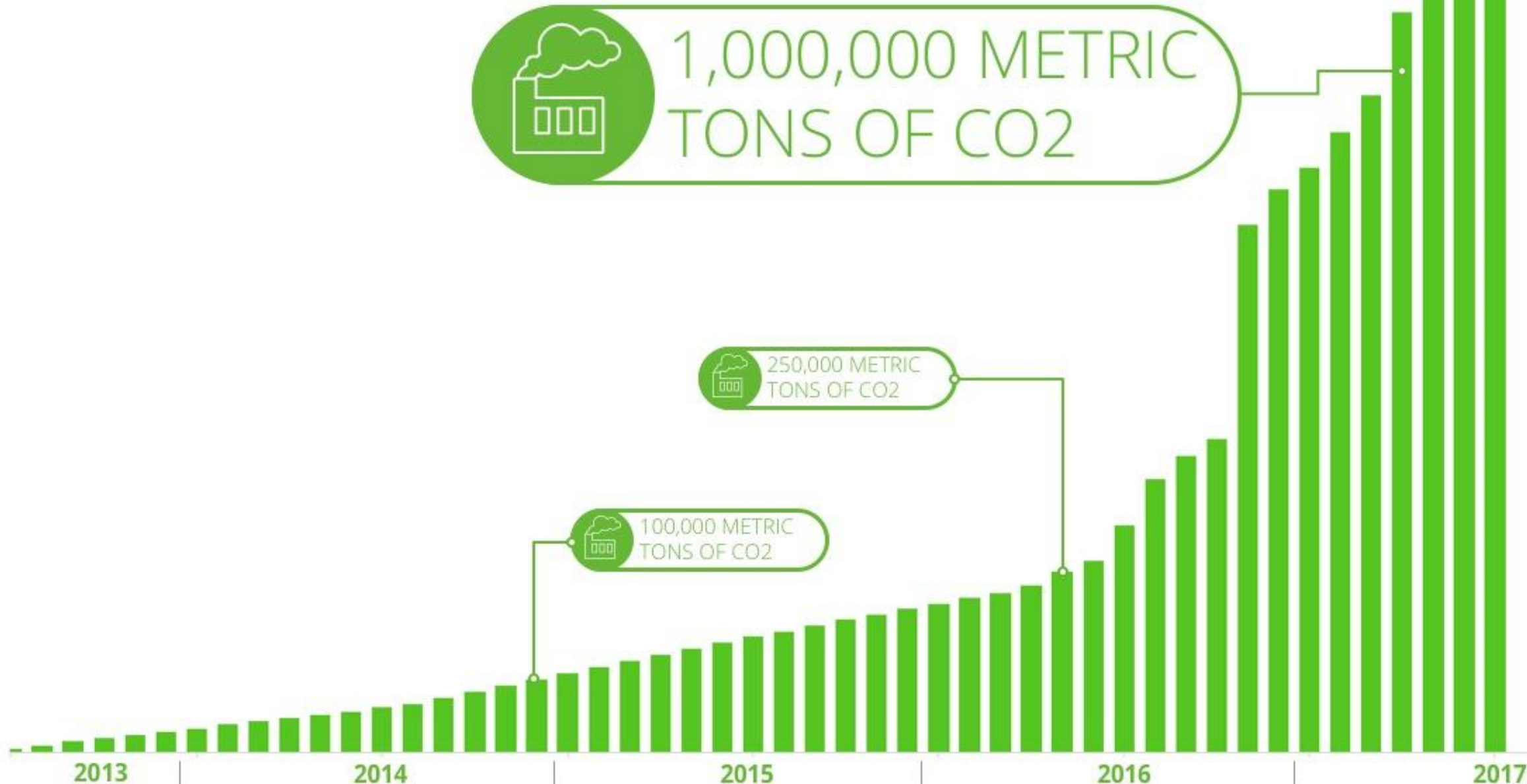
2013

2014

2015

2016

2017

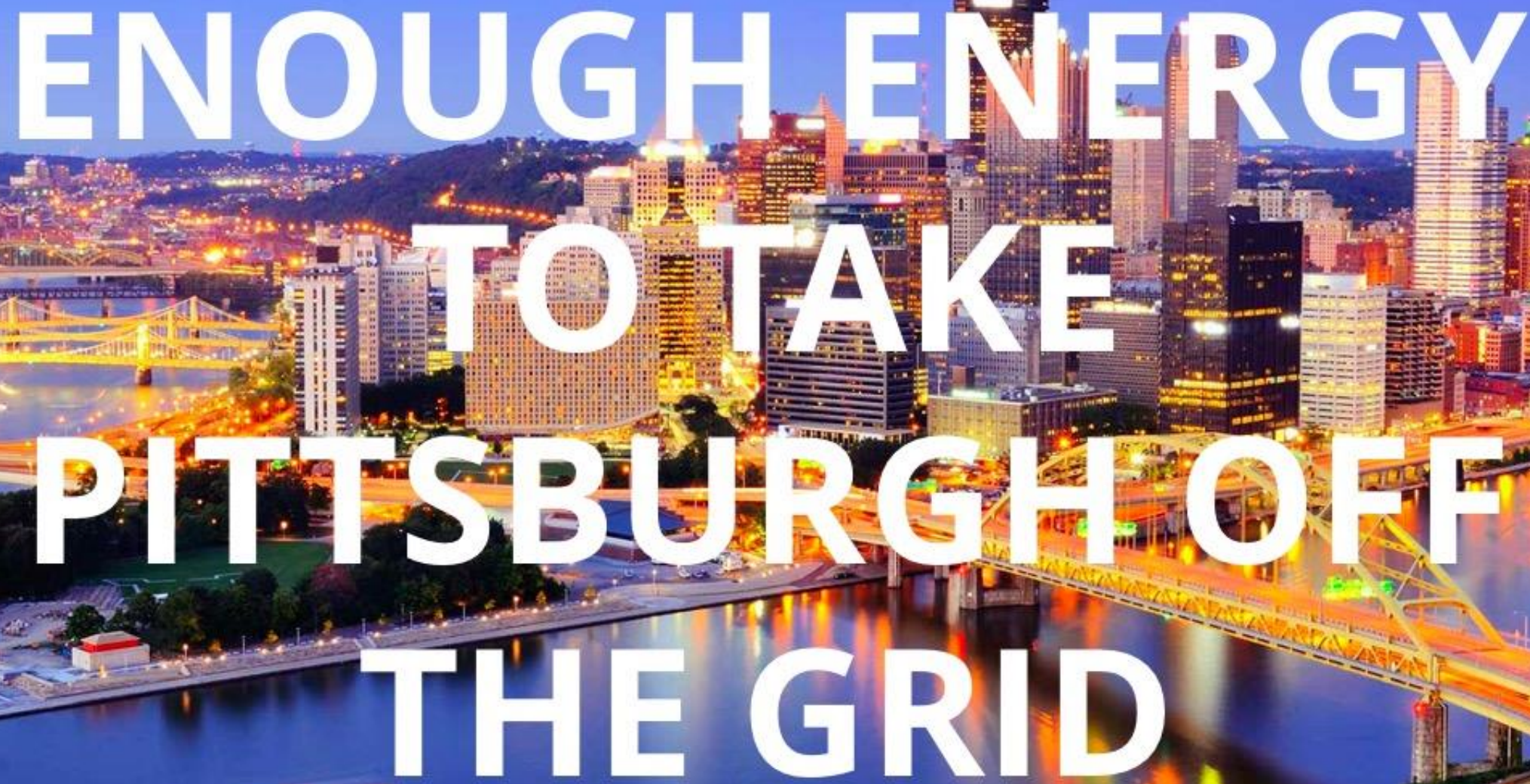




A young child with blonde hair is sitting on a dark green couch, reading a book. The child is wearing a light blue shirt and dark pants with orange sneakers. The couch has patterned cushions. In the background, there is a window with sheer curtains and a dark jacket hanging on the wall to the right. Large, bold, white text is overlaid on the image.

**CUSTOMERS  
HAVE SAVED  
\$100 MILLION**



A nighttime photograph of the Pittsburgh skyline, featuring numerous illuminated skyscrapers and bridges over the Allegheny River. The city lights are reflected in the water, and the sky is a deep blue. The text is overlaid in large, white, sans-serif capital letters.

ENOUGH ENERGY  
TO TAKE  
PITTSBURGH OFF  
THE GRID



# What customers say



**Robert S.**

**ComEd.**

Very good prices against things that challenge me in order to be more efficient.



**Jeffrey L.**

**Xcel Energy\***

Great service, easy transaction, instant savings vs waiting for rebates! A win win!"



**Michelle R.**

**Georgia Power**

I like the goods and services. My goal is to lower my energy usage and my energy costs. This store has been helpful!



**Meg T.**

**RG&E**

The items offered are quite relevant when trying to build a smart home.



**Arvind S.**

**Orange & Rockland**

I like the product offerings. Please keep adding to the store as things become feasible.

# Net Promoter Score



Promoters  
81%



Passives  
14%



Detractors  
5%

A photograph of two young girls with long brown hair in a kitchen. The girl in the foreground is holding a smartphone and sticking her tongue out at the screen. The girl behind her is also looking at the phone. The background shows a white subway tile wall and a dark faucet. The text 'WHEN A UTILITY CONNECTS WITH CUSTOMERS' is overlaid in large white letters.

WHEN A UTILITY  
CONNECTS  
WITH CUSTOMERS





SIMPLE  
energy



# Cleantech Forum | **San Francisco**

## The Rising Stars

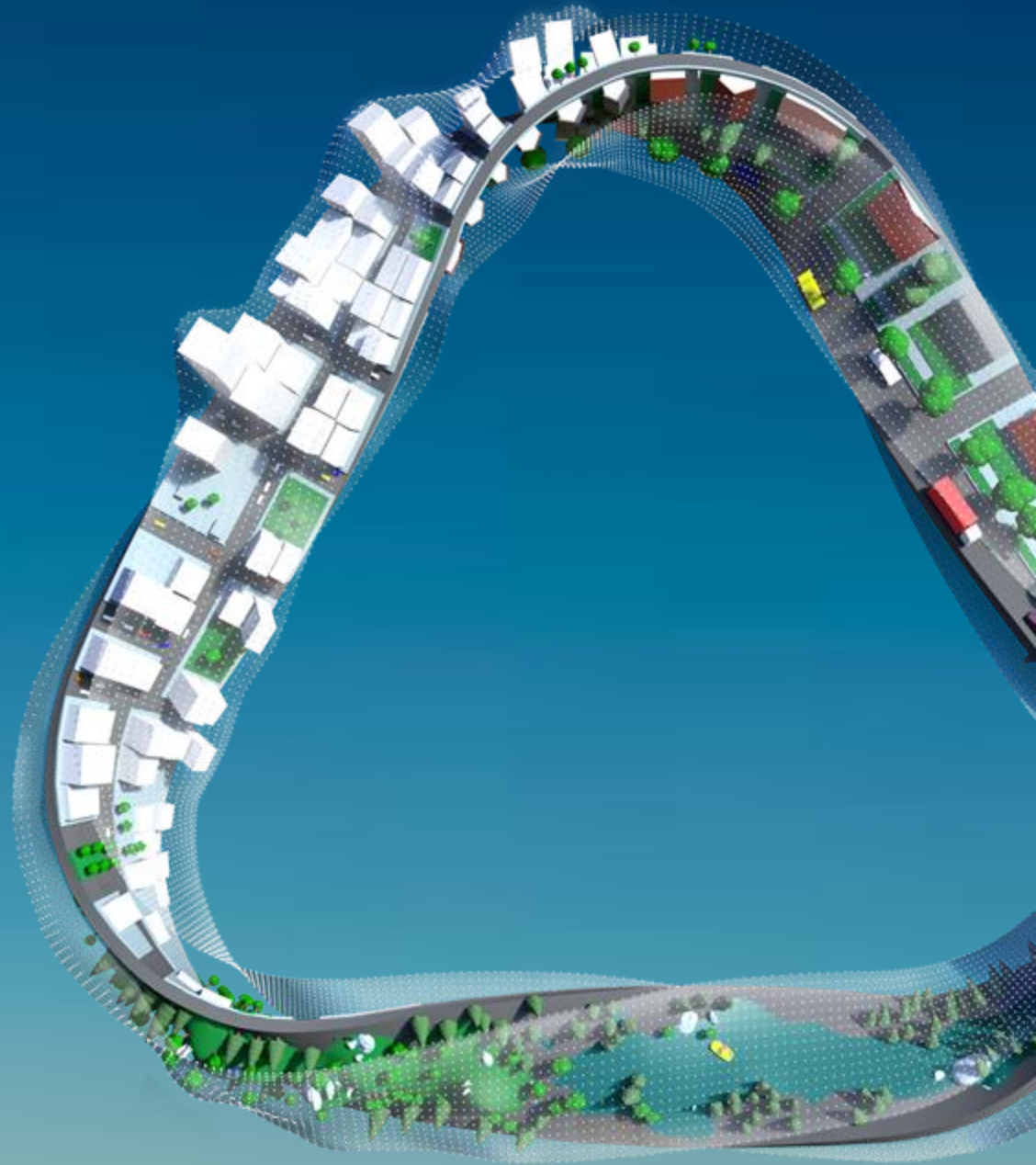


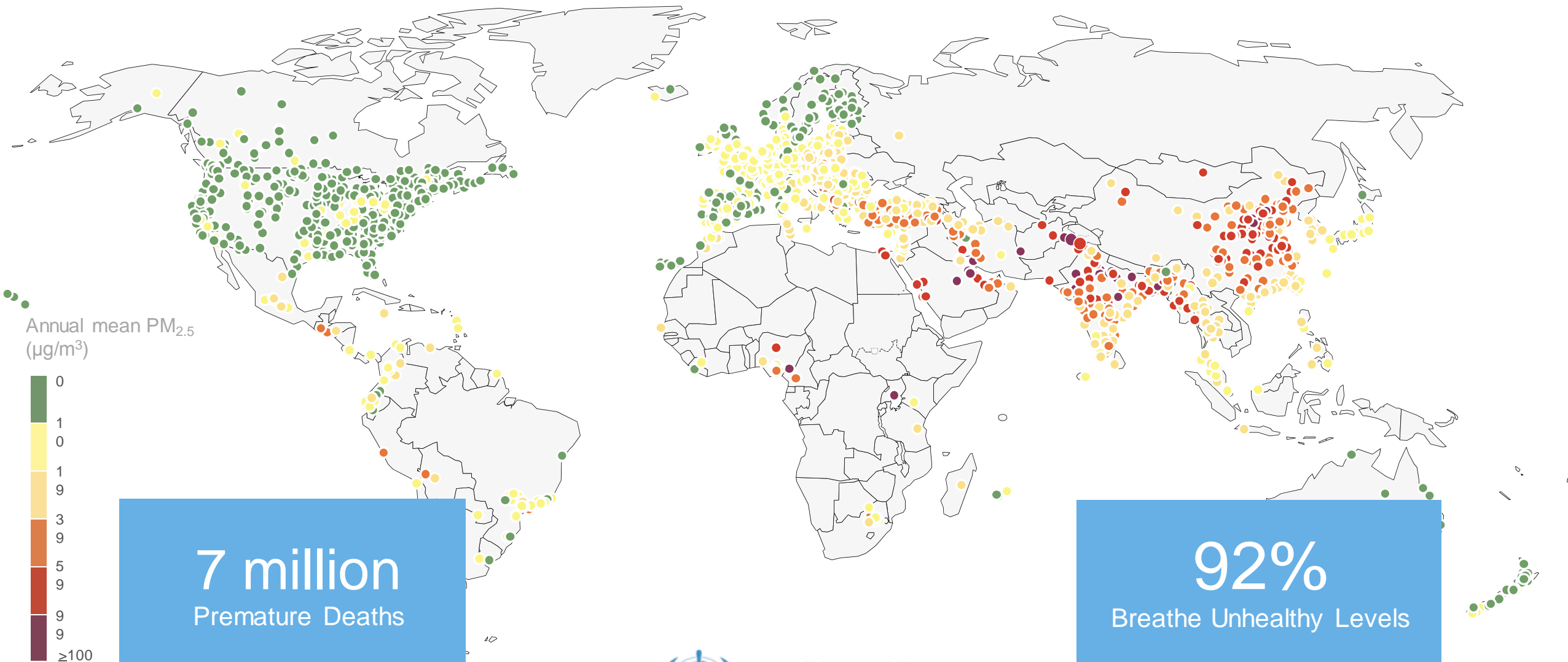
**DAVIDA HERZL**  
CEO, Aclima





Environmental intelligence  
for people and the planet.









You can't manage what you don't measure.

△ acuma.

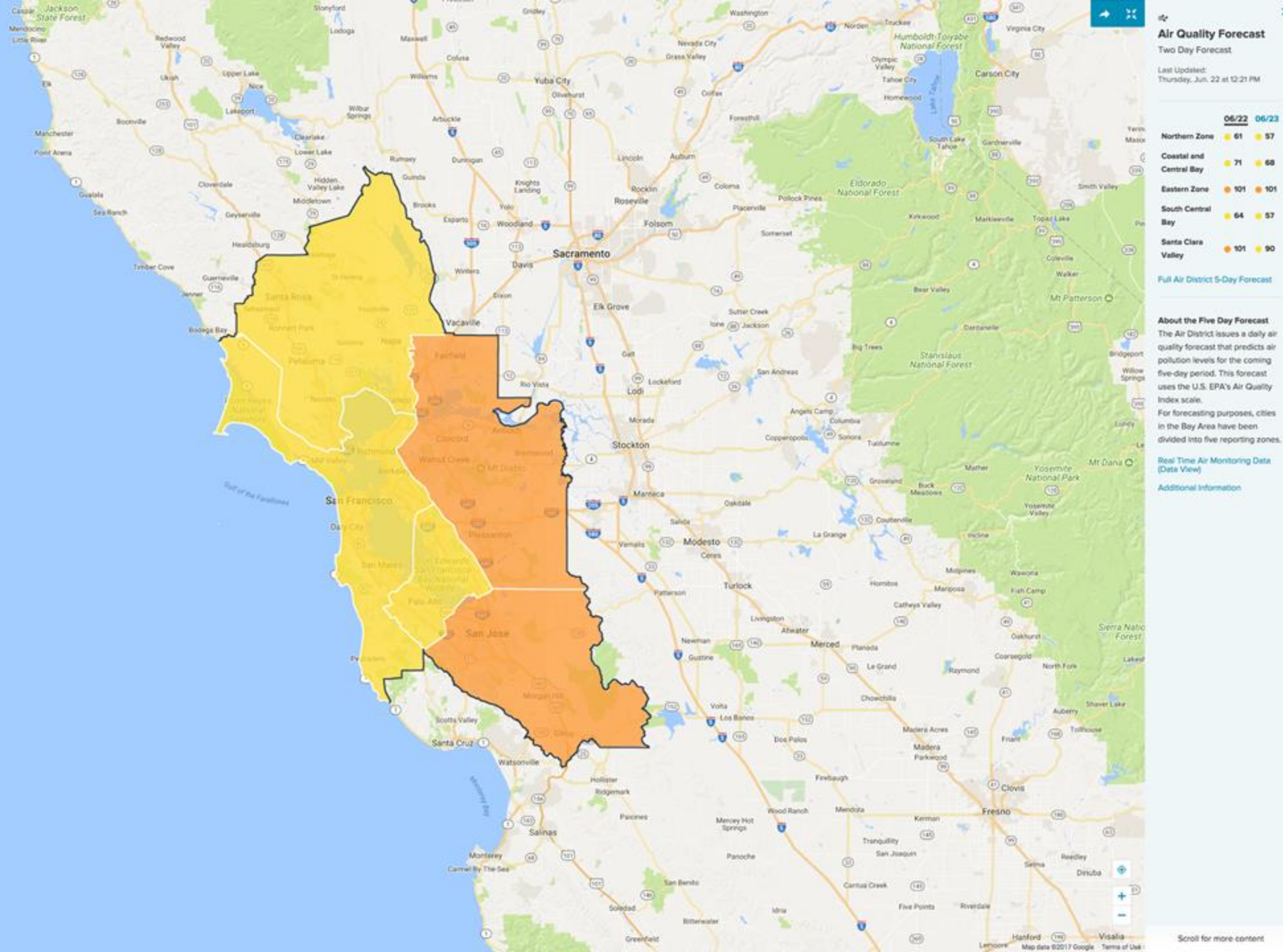
Aclima delivers a real-time pulse of our buildings, cities, and communities.







# TODAY





# TOMORROW





Air quality data from Google / Aclima

Google Earth



# An Earthshot opportunity made for this moment.

“With a trillion sensors embedded  
in the environment ... we'll be able to  
hear the heartbeat of the Earth.

– Peter Hartwell, Former Senior Researcher, HP Labs

