

# Low Carbon Economy

## Solar



## Smart Grid



## Wind



## Carbon



## Energy Efficiency



## Recycling



# Data Science for Sustainability

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Redwood City, CA

Founded Apr 5, 2013

About us...

Members	203
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We're about


Math · Sustainable Energy · Python · Sustainability · hadoop · Energy · Machine Learning · Data Analytics · Quantitative Finance · Data Visualization · Predictive Analytics · Quantitative Analysis · Data Mining · Data Science · Algorithms

Organizers:

Joe Kwiatkowski,  
Adam Rein




## Data Science for Sustainability @ MissionPoint Capital Partners

 Edit  Cancel  Feature  Copy  Ticket  Export  Tell a friend

 Share

Only Organizers can edit

 Thursday, June 6, 2013

6:30 PM to 9:00 PM

 MissionPoint Capital

212 Sutter Street, 2nd Floor, San Francisco, CA ([edit map](#))

### ABSTRACT

This interactive meetup will engage participants in identifying new opportunities for data science to bring transformative solutions to sustainability. Adam Rein, Principal at MissionPoint Capital Partners, will give a brief overview on the concept of sustainability and its relationship to the concepts of resiliency, "clean web", and others. Small group discussions will identify where predictive analytics can make breakthroughs across key sustainability sectors, including energy, agriculture, water, and recycling. This will include tangible steps that can be taken to spur innovation by creating a predictive model challenge or locating publicly available data sets. Light refreshments will be served.

SCHEDULE

Your RSVP: Yes

[CHANGE RSVP](#)

Tools 

50 attending

No spots left, 8 people waiting



Adam Rein  
CO-ORGANIZER

At MissionPoint Capital partners, we support innovation in sensors and data analytics to improve sustainability... [more](#)

 [Edit your intro](#)



Joe Kwiatkowski  
ORGANIZER  
EVENT HOST

I lead the development of algorithms for EcoFactor, providing energy efficiency and load-shaping for... [more](#)

# Energy and Data Landscape

## Buildings

Data Center  
Office

MUSH  
Homes

Voltage/Meter

Thermostat

User

EcoFactor  
PlotWatt  
Honest Buildings  
WegoWise

Utility  
Homeowner  
Building Owner

## Vehicles

EV  
Consumer In-Car

Route Plans  
Shared Vehicles

Vehicle Data

Smartphone

GIS

RidePal  
VCharge  
Dash  
FuelMiner

Drivers  
Auto OEMs  
Fleet Owners

## Industry

Agriculture  
Water  
Steel & Concrete

Solar/Wind  
Output  
Finance  
Trading

Aerial Images

Equipment

Weather

Kwh Analytics  
OnFarm Systems  
ActualSun  
Space-Time Insight

Farmer  
Manufacturer  
Project Developer

## Transmission

Grid  
Stability  
Pipelines

Demand  
Response  
Storage

Government

Grid Devices

Utilities

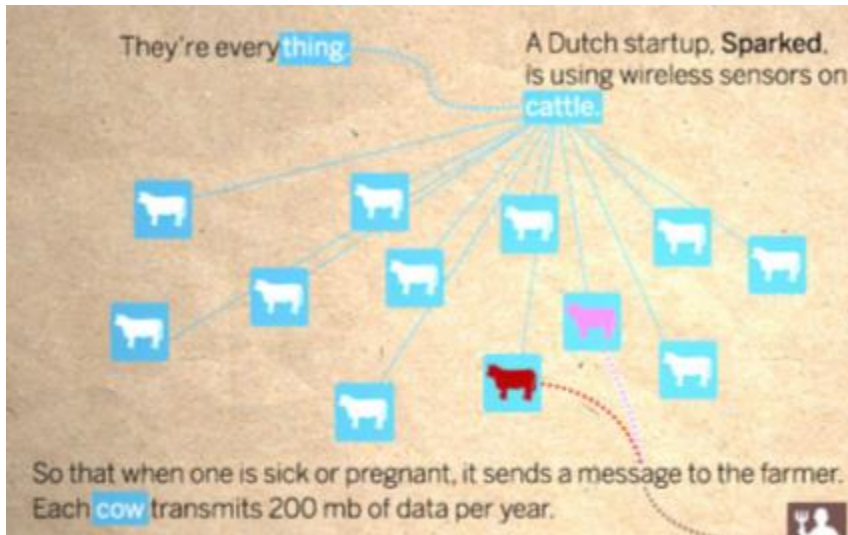
AutoGrid  
Stem  
Energy Informatics  
AdaptiveAlgo

Utility  
ISO  
Oil & Gas

# Livestock monitored by sensors and phone

## Opportunity

Sensors embedded on livestock provide information on both animal health and broader climate. For nomadic herds, a powerful tool for track broad areas of developing countries



## Existing Orgs

### Sparked

NGO

Cow wireless sensors to monitor when sick or pregnant. Dutch project.

### iCow

NGO

Mobile app allows herders to register their cows individually and receive tailored text messages on cattle prices, feeding schedules, veterinary care.

### Esoka

NGO

BusyLabs. Africa. Web/SMS tools to quick send info to farmers in the field. George Soros funded.

### M-Farm

Venture

Kenya all-female team of developers, allows farmers to group together through mobile phones to offer exporters and retailers bulk crops.

### SMART Coops

Venture

MIT Team, Phillipines pilot. Mobile marketplace connects farmers to ag coops, and other stakeholders. Free for farmers, crop buyers pay fee.

# Sustainability vs Resilience

## Sustainability

## Resilience

<b>Goal</b>	<b>Optimize reach to equilibrium</b>	<b>Bounce Back from shocks</b>
<b>Sensors</b>	Measure all variables	Detect sudden changes
<b>Data Analytics</b>	Model how system works	Determine “warning” that shock is about to occur
<b>Outcomes</b>	Improve system efficiency: less inputs, more outputs	Trigger restorative feedback loops or adaptive mechanisms
<b>Examples</b>	Continuous Commissioning of Building Energy Use  Drip irrigation / Hydroponics  Adaptive Transport Pricing  Emissions market pricing	Microgrids to prevent blackouts during shock to electric grid  Predictive Maintenance  Infectious disease monitoring  Crop insurance pricing

# *Energy and Data Advice*

## **1. Don't Follow the Herd and Do the Easy Stuff**

- App that shows a homeowner energy use in a chart
- Crowdfunding platforms

## **2. Find a Customer Who Will Pay**

- Service that uses analytics is more valuable than Data in a report
- Utilities are tough customers (the “Opower exception”)

## **3. Formula: Old Data + Proprietary Data = Analytics**

- Climate Corp - Weather forecasting
- Waze - User inputs plus GIS map directions

## **4. Beware of Hardware**

- Requires lots of capital, often commoditized over time (drones)
- Best models use partnership for deployment (pay-as-you-drive)