

Spring 4-11-2016

# Catalyzing the carbon utilization industry through the NRG COSIA Carbon XPRIZE

Paul Bunje  
*XPRIZE*

Follow this and additional works at: [http://dc.engconfintl.org/co2\\_summit2](http://dc.engconfintl.org/co2_summit2)



Part of the [Environmental Engineering Commons](#)

---

## Recommended Citation

Paul Bunje, "Catalyzing the carbon utilization industry through the NRG COSIA Carbon XPRIZE" in "CO2 Summit II: Technologies and Opportunities", Holly Krutka, Tri-State Generation & Transmission Association Inc. Frank Zhu, UOP/Honeywell Eds, ECI Symposium Series, (2016). [http://dc.engconfintl.org/co2\\_summit2/6](http://dc.engconfintl.org/co2_summit2/6)

This Abstract and Presentation is brought to you for free and open access by the Proceedings at ECI Digital Archives. It has been accepted for inclusion in CO2 Summit II: Technologies and Opportunities by an authorized administrator of ECI Digital Archives. For more information, please contact [franco@bepress.com](mailto:franco@bepress.com).

# Catalyzing the Carbon Utilization Industry

The NRG COSIA Carbon XPRIZE Competition



A white SpaceShipOne spacecraft is shown in space, orbiting Earth. The spacecraft's nose cone is decorated with a pattern of black stars and circles. The main body is white with several circular windows. The nose cone is a reddish-brown color. The background is the blue and white horizon of Earth from space.

# ANSARI XPRIZE

First team to privately build a  
spaceship that could carry 3 adults  
to 100 km, twice in two weeks

# XPRIZE CONTINUES TO MAKE HISTORY

AWARDED: \$34 Million

ANSARI XPRIZE

PROGRESSIVE  
AUTOMOTIVE XPRIZE

NORTHROP GRUMMAN  
LUNAR LANDER XCHALLENGE

WENDY SCHMIDT  
OIL CLEANUP XCHALLENGE

NOKIA  
SENSING XCHALLENGE

WENDY SCHMIDT  
OCEAN HEALTH XPRIZE

ACTIVE: \$94 Million

Google  
LUNAR XPRIZE

QUALCOMM  
TRICORDER XPRIZE

GLOBAL  
LEARNING XPRIZE

nrg | cosia  
CARBON XPRIZE

BARBARA BUSH FOUNDATION  
ADULT LITERACY XPRIZE  
PRESENTED BY  
DOLLAR GENERAL  
LITERACY FOUNDATION

Shell  
OCEAN DISCOVERY XPRIZE

# PRIZES ARE POWERFUL TOOLS FOR INNOVATION

1. Very EFFICIENT
2. Highly LEVERAGED
3. Open to innovators EVERYWHERE
4. It's about MORE than the purse
5. Audacious but ACHIEVABLE target
6. Clear, MEASURABLE outcomes



**\$2.5M – Start-up**



**\$10M - Purse  
Ansari Family**



**>\$120 Million  
Teams' spend**



**~\$3 Billion  
Industry**



# PRIZE COMPETITIONS: STACKING INCENTIVES

Investment  
Threshold



Existing  
Incentives



# PRIZE COMPETITIONS: STACKING INCENTIVES

Investment  
Threshold



Existing  
Incentives



Total Prize Incentives

Prize Purse

Associated Market Commitments

Media Attention

Competition Resources

Legitimization of Industry

Interesting Work

Glory & Prestige

**CO<sub>2</sub> EMISSIONS DRIVE  
CLIMATE CHANGE**



**THE WORLD DEPENDS  
ON ENERGY**



INTRODUCING THE

nrg<sup>+</sup> | cosia  
CARBON XPRIZE<sup>®</sup>

The NRG COSIA Carbon XPRIZE is a \$20 million competition to convert the most CO<sub>2</sub> into one or more products with the highest net value.

# SNAPSHOT OF THE CARBON XPRIZE

<b>THE WINNING TEAM WILL...</b>	Convert the most CO <sub>2</sub> into one or more products with the highest net value
<b>PRIZE PURSE</b>	<ul style="list-style-type: none"><li>• \$2.5M milestone prize purse for each track</li><li>• \$7.5M grand prize purse for each track</li></ul>
<b>TIMELINE</b>	4.5 years: September 2015 – March 2020
<b>STRUCTURE</b>	<p>Teams register for one of two tracks:</p> <ul style="list-style-type: none"><li>• 1 track tested on coal</li><li>• 1 track tested on natural gas</li></ul> <p>Teams compete in three rounds:</p> <ul style="list-style-type: none"><li>• Round 1: Technical and Business Viability Assessment</li><li>• Round 2: Pilot Scale Competition</li><li>• Round 3: Demonstration Scale Competition</li></ul>
<b>JUDGING CRITERIA</b>	<p><b>Scoring Criteria:</b></p> <ul style="list-style-type: none"><li>• Amount of CO<sub>2</sub> converted into products</li><li>• Net value of products</li></ul> <p><b>Minimum Thresholds:</b></p> <ul style="list-style-type: none"><li>• Maximum volume of fresh water consumed</li><li>• Maximum land footprint in Round 3 demonstration</li></ul>

# Snapshot of Competition Rounds

## Round 1: Technical & Business Viability Assessment

Down-selection by judges based on scoring criteria, performance thresholds, and demonstrated ability to compete in Round 2

## Round 2: Pilot-Scale Competition

Up to 30 teams (15 per track)

Testing at lab / **location of team's choosing**

Simulated flue gas, **min. 200 kg CO<sub>2</sub> / day**

3<sup>rd</sup> party measurement and verification of performance data

## Round 3: Demonstration-Scale Competition

Up to **10 teams** (5 per track)

Testing at competition **test facilities** (Track A & Track B)

Real flue gas, **2T – 5T CO<sub>2</sub> / day**

3<sup>rd</sup> party measurement and verification of performance data

# COMPETITION TIMELINE





As of 7 April 2016:

1202 Individuals

113 Team Profiles

From 29 Countries

# BENEFITS OF COMPETING

- Prove a Radical Breakthrough
- Accelerate an Industry
- Publicity
- Access to Industrial Testing Facilities
- Professional Resources
- Networking With Experts
- Prize Money





# PRIZE IMPACTS

## 1. Accelerate Innovation Lifecycle

- Demonstrate Technology Breakthrough
- Mobilize Talent

## 2. Catalyze Markets

- Create or Disrupt Markets
- Attract & Leverage Investment

## 3. Benefit Humanity

- Inspire Positive Action
- Influence Public Perception

## 4. Energize the Community

- Strengthen Community
- Enable Thought Leadership
- Enable Partner Missions
- Engage the Government

# Join A Team Join the Conversation



nrg<sup>+</sup> | cosia  
CARBON XPRIZE<sup>®</sup>

[carbon.xprize.org](http://carbon.xprize.org)