An Emerging Culture:

Hydrogen Fuel Cell Use in East Los Angeles

The Team from California State University, Los Angeles:

Dr. David Blekhman, Professor of Technology, College of Engineering, Computer Science and Technology

Mr. Michael Dray, Esq., Technical Operations Manager, Hydrogen Research and Refueling Facility and College of Engineering, Computer Science and Technology,

Dr. Cheryl L. Ney, Dean, Charter College of Education, Chemistry Professor
Outline for the presentation

I. Setting the stage: “The Culture of Technology Practice” (2 minutes)

II. The Hydrogen Research and Refueling Facility at Cal State LA (5 minutes)

III. Technical Education and Workforce Training at Cal State LA (5 minutes)

IV. Broad outreach: Education, Business, Media, and more (5 minutes)
“The Culture of Technology”

Describes the web of human interaction surrounding a technology---the “technology practice”

- Technical Aspects
- Organizational Aspects
- Cultural Aspects

(Attributed to Dr. Arnold Pacey, noted historian of technology)
Technical, Organizational and Cultural Features of Technology Practice

**Technical**
- Knowledge
- Skills and techniques
- Tools, machines, etc.

**Organizational**
- Economic activity
- Industrial activity
- Professional activity

**Cultural**
- Users/consumers
- Role of government
- Education and outreach
- Goals, values and ethical codes
- Beliefs about progress
- Role for the arts
Original Goals for the Hydrogen Research and Refueling Facility

• Building a hydrogen fueling station to serve the central Los Angeles area and become a focal point of commercialization, research, educational and outreach activities.

• Redesigning the curriculum to implement an effective Alternative and Renewable Energy Technologies program including hydrogen economy and fuel cell applications.

• Conducting research in collaboration with the Center for Alternative and Renewable Energy and Sustainability. Funded by NSF programs and local partners.
Two firsts for the Cal State LA station!
Facility Interior View

- Storage Banks
- (3) Compressors
- H2 Chiller
- H2 Electrolyzer Unit
At the pump
Fueling for….

- Ney-Dray lease
- 15-16: one additional car for the station and two cars for public safety and two buses. Proposed car fleet
- Volkwagon, Audi contract
- Hyundai contract <insert picture of Hyundai>
- GM test cars
A Station Designed for Outreach
Outreach to 3000: Fall 2013 to the present

- 85% Educational outreach
  - 50% High School
  - 10% Cal State LA
  - 5% Community Colleges
  - 5% K-8
  - 11% Combined
  - 5% Enviro. Educators

- 8% Attendees at Commissioning
- 2% Bus.-non U.S.
- 1% Bus.-US
- 1% Media
- 1% Governmental
- 2% Other
Preparing the Workforce in the clean energy transportation

• Cal State LA Energy, Power and Transportation program
• Building the pathway from automotive technology programs at area community colleges
• Fostering interest and building the pathway from high schools
• Fostering interest in children and youth
Partnering with Area High Schools

• Integrating with Linked Learning High schools in the area—curriculum (a-g), site based learning and work based learning *(Partners with LAUSD and Montebello USD)*

• Integrating with STEM and other courses at area high schools
Fostering interest in children and youth
Other Workforce and Societal Needs: Integration Across the University

• Environmental educators
• Social science
• Business
• Communications
• Health and Human Services
Campus as a Living Lab: Learning Community of Environment and Sustainability Educators

Faculty Mentor: Dr. Manisha Javeri
Professor Instructional Technology, Charter College of Education
Presenter: Carolina Sandoval

Deliverables

Data and Outcomes of the Grant Project 2013–2014

PBI Dinner
International Day of Dance 2015

A.R.T.
ARTIST REACH TENSION

Artistic Director
Dr. Seonagh Odhiambo Horne

Music Director and Composer
Bennie Maupin

Guest Artists
Angel Luis Figueroa, Lindsey Lollie, Evan Montgomery,
Munmi Son and Alumni artists

May 2 & 3, 2015

ARC PASADENA
1156 E. COLORADO BLVD.
PASADENA, CA 91106
WWW.ARCPASADENA.ORG
The VIP Tour includes....<say more here>
Outreach: Organizational Aspects

- Stratos
- China, Japan, Korea, UK, Canada, Scotland, Germany
Conclusions and Next steps

• Planned outreach: business, media, environmental groups
• Community service car fleet
• <article on ELA in Pasadena Star News>