

## Going Green: Irvine USD's Journey Towards Greater Energy Efficiency



Green California  
Schools Summit:  
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## Irvine Unified School District Presenters

- Michael Parham - Board Member
- Gwen Gross - Superintendent
- Mark Sontag - Curriculum  
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## The Irvine Unified School District

- 27,000 students
- 38 sites
- 2,500,000 square feet of roof space
- 544 acres
- 2,609 employees



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## IUSD's Energy Plan

- Reduce electrical usage
- Develop curriculum to enlist students as the catalyst for change
- Implement solar projects to link curriculum, facilities and usage
- Develop community and municipal partnerships



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## Ingredients for Success

1. District Vision and Leadership
2. Partnership between M&O, Facilities, Curriculum and Business Services
3. Communication with staff and community
4. Start small; Existing contracts
5. Enlist support – “What can you do to help?”
6. Changing a culture of behavior
7. Students as a catalyst for change



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## A Vision for Energy Self-Sufficiency

- Five Components
  - Facilities
  - Grounds/Landscaping
  - District Vehicles
  - Curriculum
  - Corporate/Community Partnerships



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## Prior Efforts: Facilities

- To Date:
  - Envest: 1996-2009: \$9.4 Million
  - Kinetics: 2005: \$4.3 Million
  - Bright Schools Audit: 2008: No Cost
  - High Recovery Water Heaters/Boilers
  - Gas Audit: 2008: No Cost
  - Kiln Program: 2008: No Cost
  - IT Audit
  - Edison Current Rate Plan



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## Prior Efforts: Grounds/Landscaping

- Synthetic Turf: 2004: \$940,000
- Water Audit: 2008: No Cost
- Smart Controller Program: Grant applied for from Metropolitan Water District \$450,000
- Trash Contract: \$241,000
- M&O Staff Assigned to Sectors



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## District Vehicles: The Vision

- Goal: Reduce IUSD's carbon footprint:
- Cost of fuel has gone from \$40,000 to \$200,000 annually
  - Refine the monitoring program for vehicle use
  - Convert all vehicles to alternate fuels
  - Reduce daily district mail delivery to every other day
  - Require future student transportation contracts to use alternate fuel vehicles
- Walk-To-School Day: Year 3
- Link to curriculum



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## District Vehicles

- Trash contract requires use of alternate fuel vehicles
- Student Transportation Contract requires buses that are no more than 3 years old and run on the fuel that is most efficient and meets all AQMD Standards



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## Changing the Culture

- Removing from Classrooms:
  - Aquariums
  - Pets
  - Personal Refrigerators, Microwaves, Coffee Pots
- Automatic Computer Shut Down
- Combining Summer School Sites
  - Modifying Summer School Hours/Facilities
- Classroom Inspections/System of Notices
- E-Green Newsletter



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## Electrical Consumption

Year	Total kWh	Total \$
2007-2008	23,488,686	\$4,003,098
2008-2009	22,093,790	\$3,870,133
Difference	1,394,896 (-5.9%)	-3.3%

Dates	Total kWh	Total \$
7/1/08 – 9/30/08	5,425,482	
7/1/09 – 9/30/09	4,981,070	\$ 90,527
Difference	444,412 (-8.2%)	



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## Automating Progress Monitoring

- SchoolDude.com:
  - Scheduling software (FSDirect)
  - Utility tracking software (UtilityDirect)
  - Work order automation software (MaintenanceDirect)
  - Invoiced an equivalent of \$24.68 per student to recover costs for after hours use of our facilities, saving over \$600,000
  - Utility tracking software, allowed more visibility of our billing practice and use, saving over \$250,000
  - 14,000 Work Orders through MaintenanceDirect, saving over 7,000 hours of staff time



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## IUSD Energy Management Procedures

### Handout



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## Curriculum: The Vision

- Students as a catalyst for changing human (adult) behavior
  - Develop curriculum for grades 4, 5, 6, and 8
  - Augment existing Elementary Science Specialist program
  - Focus in all grades is to provide opportunities for students to learn about energy self-sufficiency through a hands-on, inquiry-based model.



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## Curriculum Connection: PEAK Student Energy Actions

- Prototype for curriculum innovation
- 4-week, 2-hour per day, summer school experience
- Students develop understanding of how to lower PEAK demand, use innovative technology, and explore renewable and sustainable energy sources



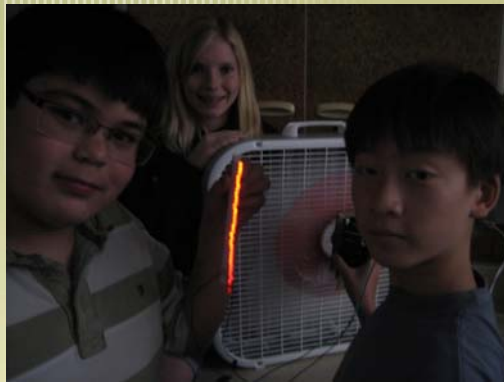
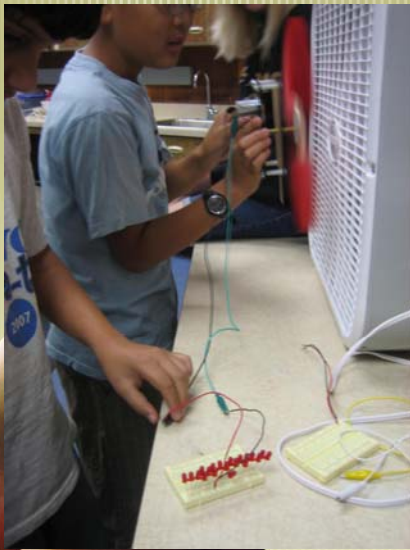
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# Solar Energy



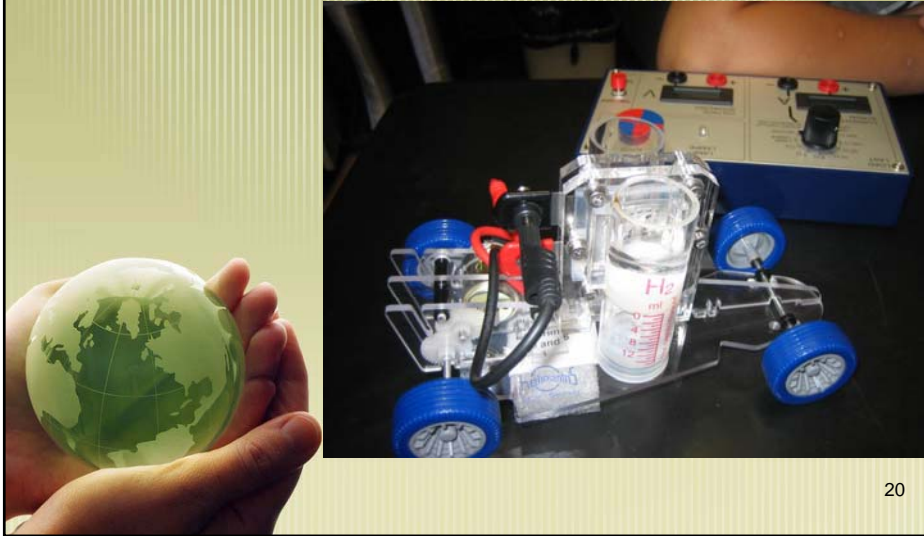
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# Wind Turbine Power



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## Hydrogen Fuel Cell



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## Curriculum Implementation

- Implement 2009-2010:
  - 4<sup>th</sup> Grade: Incorporate into existing units. Create new lessons with energy focus.
  - 5<sup>th</sup> Grade: Incorporate into existing units and utilize instructional time from mid-May to end of school (after CST testing)
  - 6<sup>th</sup> Grade: Incorporate into existing curriculum. Build upon standards that discuss natural resources.
  - 8<sup>th</sup> Grade: Utilize instructional time from mid-May to end of school (after CST testing)



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# Site Green Teams

- A Site Coordinator has been identified at all district sites
- Current focus is on recycling
- For School Site Coordinators, future meeting to discuss:
  - Measuring “phantom loads”
  - Identifying areas where lighting may be able to be reduced
- Students as a catalyst for change



# Cash for Cans



## Student Perspective

### What Would the World Be Like in 2050?

What would the world be like 41 years from now?

No more dirty skies

Or oceans

We may one day

Be able to swim with the wild dolphins and other creatures of the sea

They wouldn't need any protection

We would have more understanding and pity

For animals of the land, sea, and the sky

We would have green technology

Even the city would be clean

With fresh air

Everything would be perfect 41 years from now

*continues*



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If we didn't go green  
The land, sea, and the skies  
Would be a wretched place  
The skies would be polluted

Everywhere you see

The sky would be brown

As well as the sea

The land would be littered

With unpleasant things

The world would be the dirtiest 41 years from now

We must choose our path, go green or not

For our home.

Matthew Kwak; 6<sup>th</sup> Grade; Bonita Canyon



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## New or Existing Corporate And Community Partnerships

- The Energy Coalition
- The City of Irvine
- The Irvine Company
- Irvine Public Schools Foundation
- The Arnold and Mabel Beckman Foundation
- Irvine Valley College and the University of California, Irvine
- Edison
- Sempra
- Irvine Ranch Water District
- National Fuel Research Center (UCI)
- Solar Power: SPG Solar
- Sun Edison
- Wind Turbines: WindTerra
- Vehicle Conversions: Fuel Systems
- Solid Oxide Fuel Cells: Siemens SOFC



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## City of Irvine/IUSD Partnership

- Find ways to have the City of Irvine and IUSD work collaboratively towards common goals
- Use students as the catalyst for change
- A common message to the community



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## Summary

- District leadership and vision is essential
- Communicate with staff the following:
  - Utility costs will continue to rise
  - Every dollar saved is an additional dollar for other uses
  - Talk the talk and walk the walk
  - Imperative to educate students about the future
  - Develop student green teams
  - Find a project to link facilities with curriculum



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In the end it will be human power – insight, innovation, entrepreneurship, and most of all leadership – that rises to meet these challenges. Unleashing this human power is, in many ways, the key to the next 100 years.

(A One Tonne Future, p. 73)



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## Additional Information or Questions

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