

Renewable Hydrogen Fueling Station IPRO 301



ILLINOIS INSTITUTE OF TECHNOLOGY

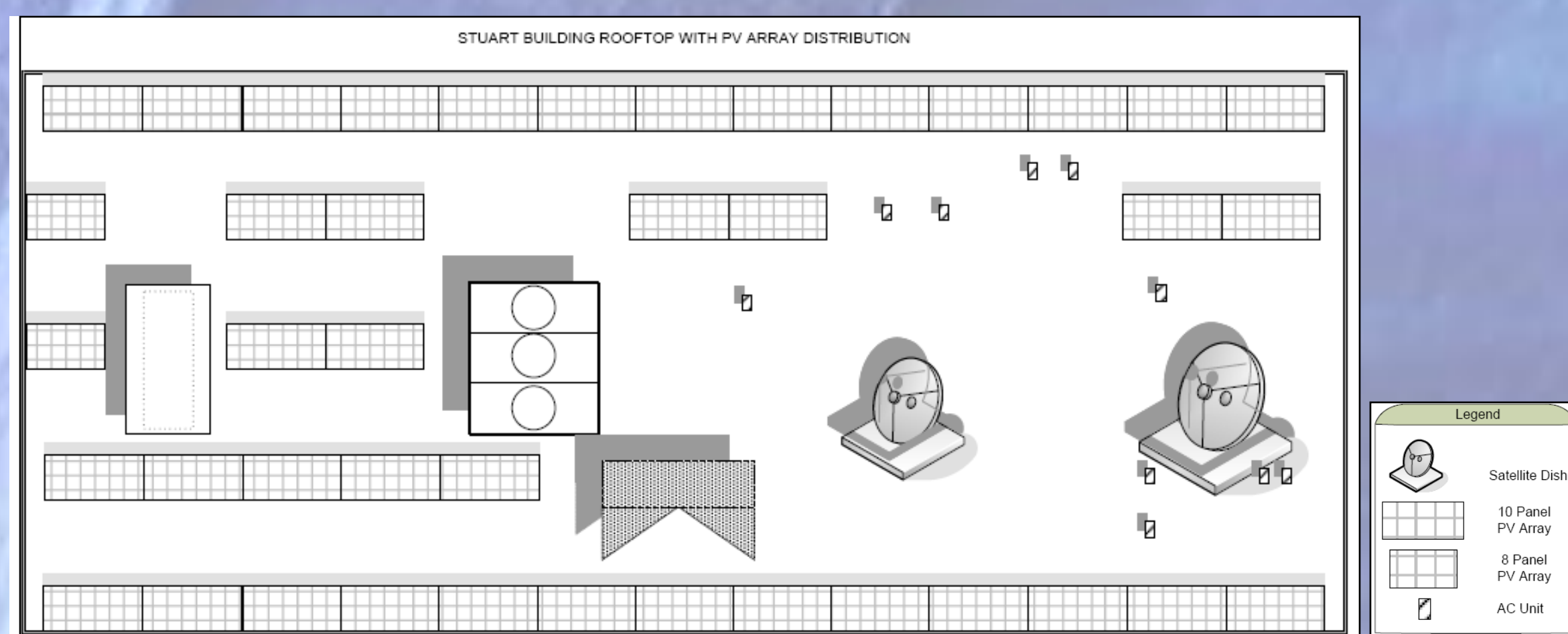
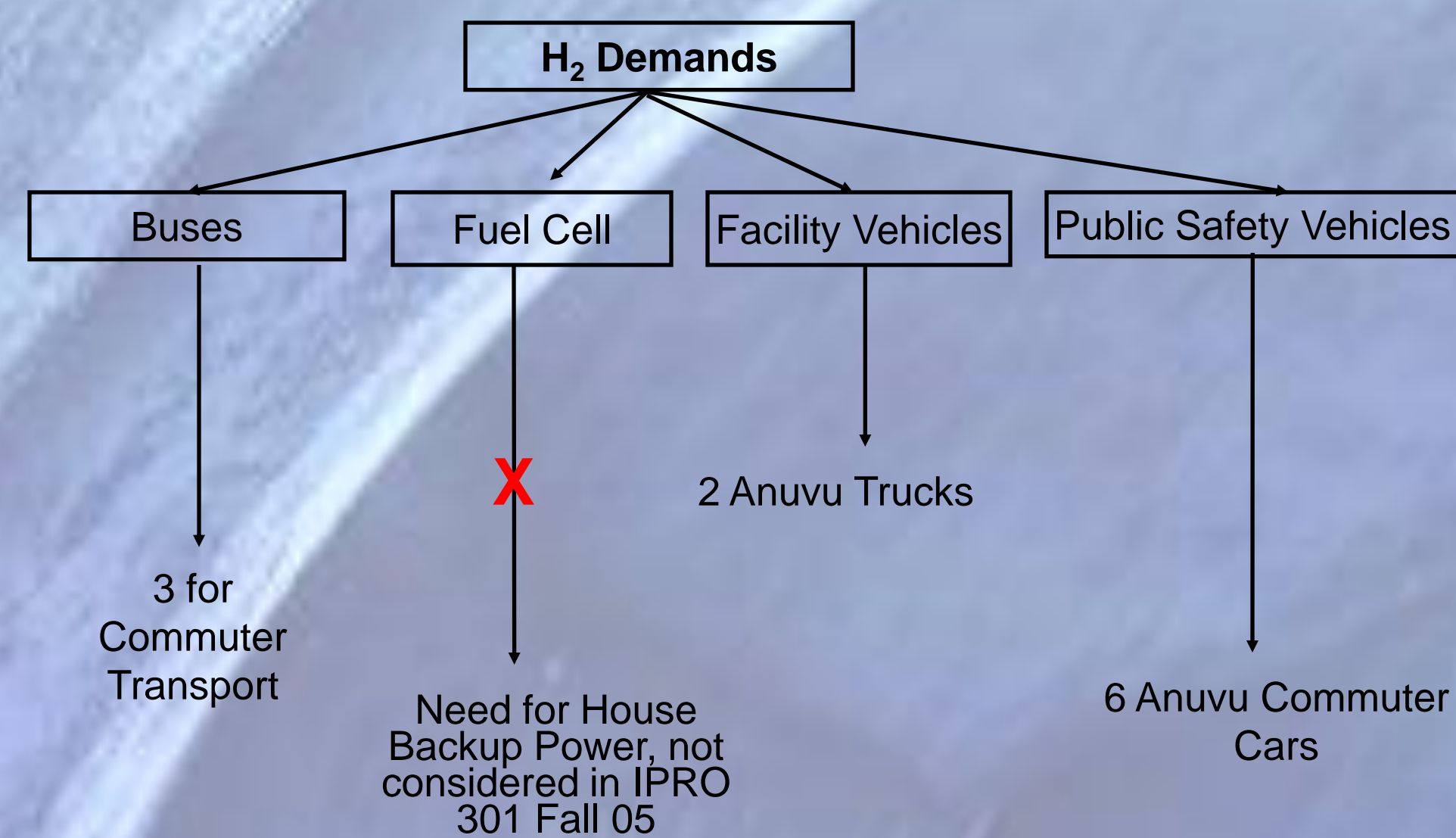
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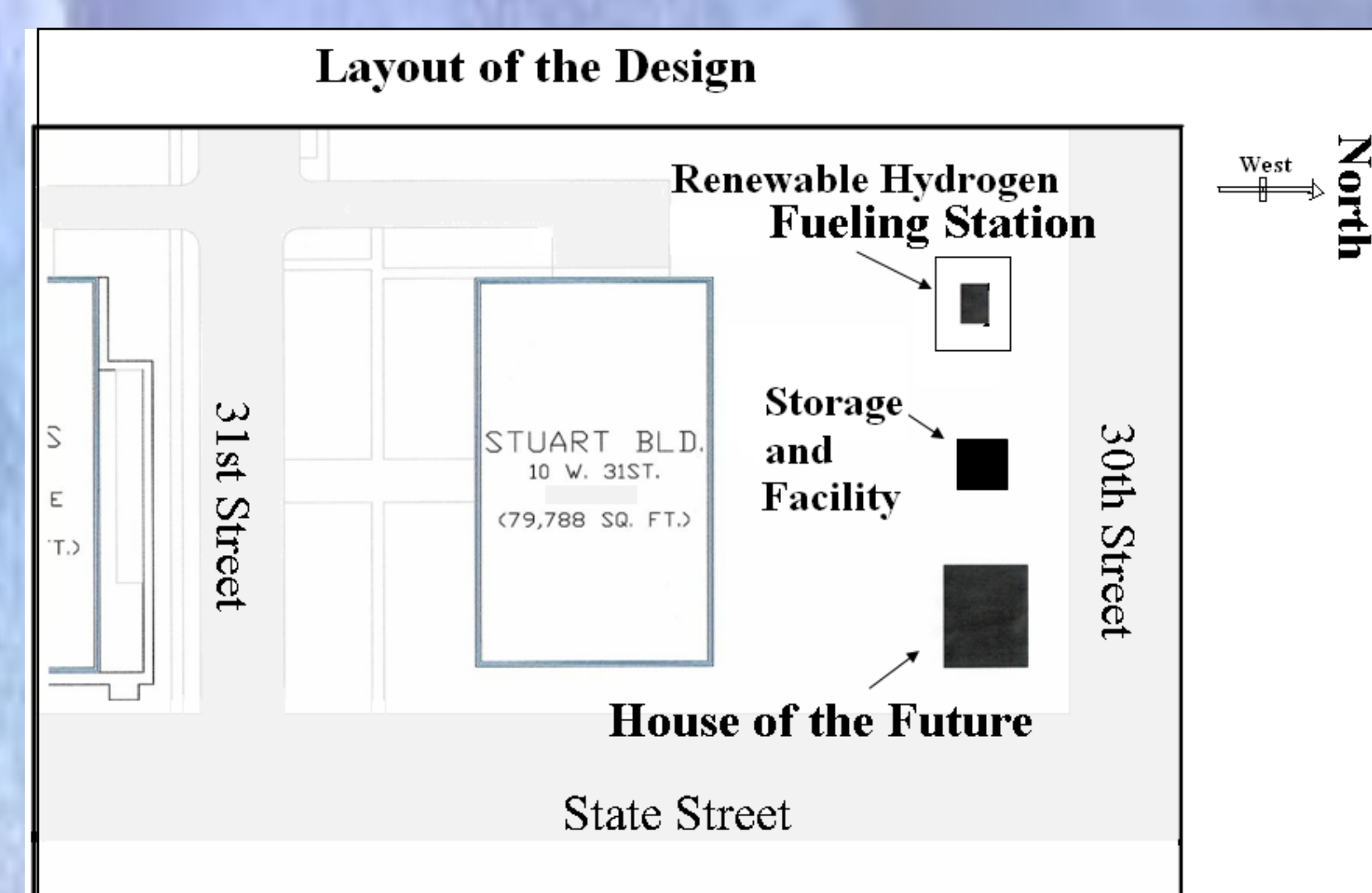
Objectives

To develop a strategic design of a "Hydrogen Fueling Station"

Hydrogen Demands Flowchart

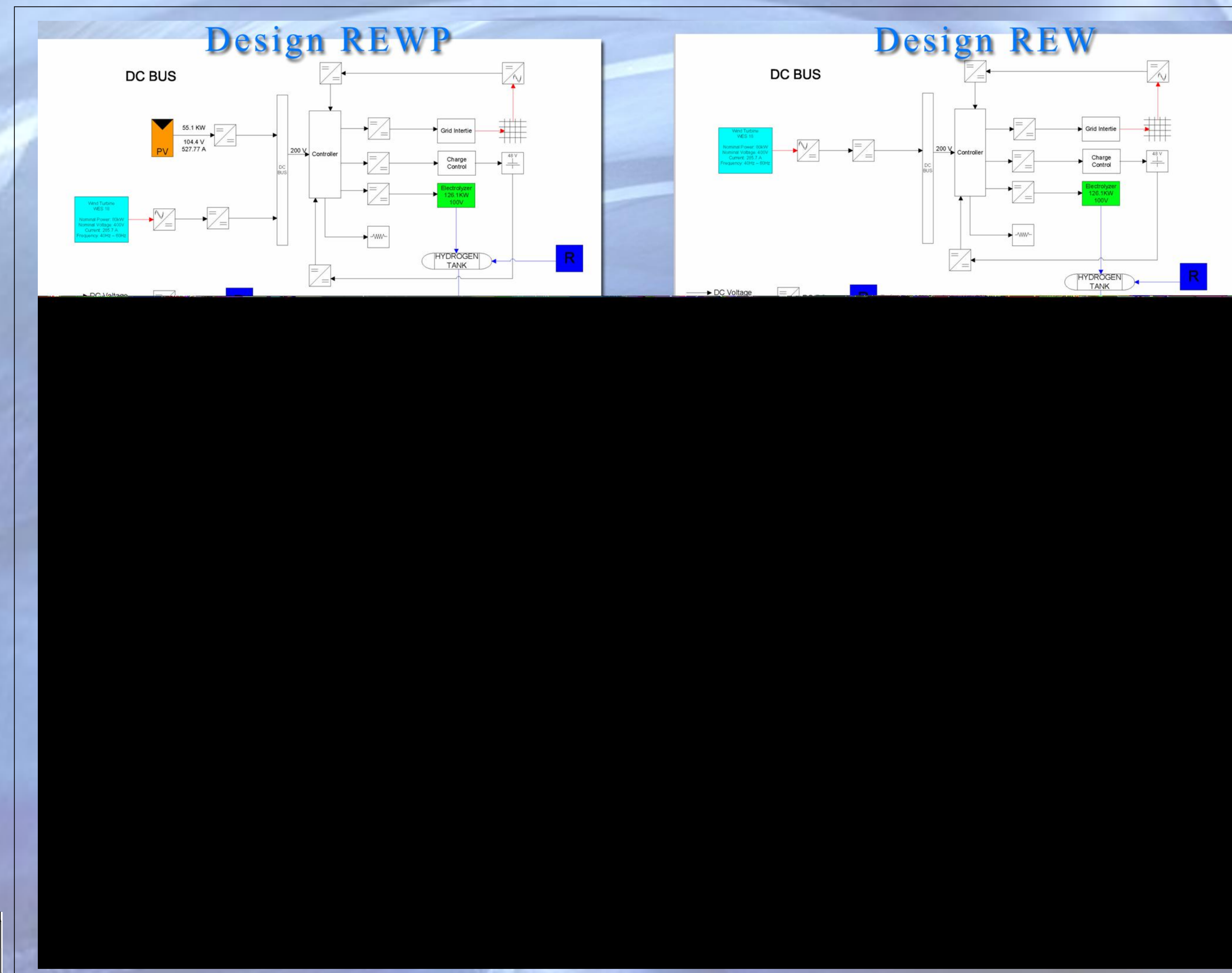


Stuart Building Roof Plan



Site Map

Accomplishments Hydrogen Production Designs

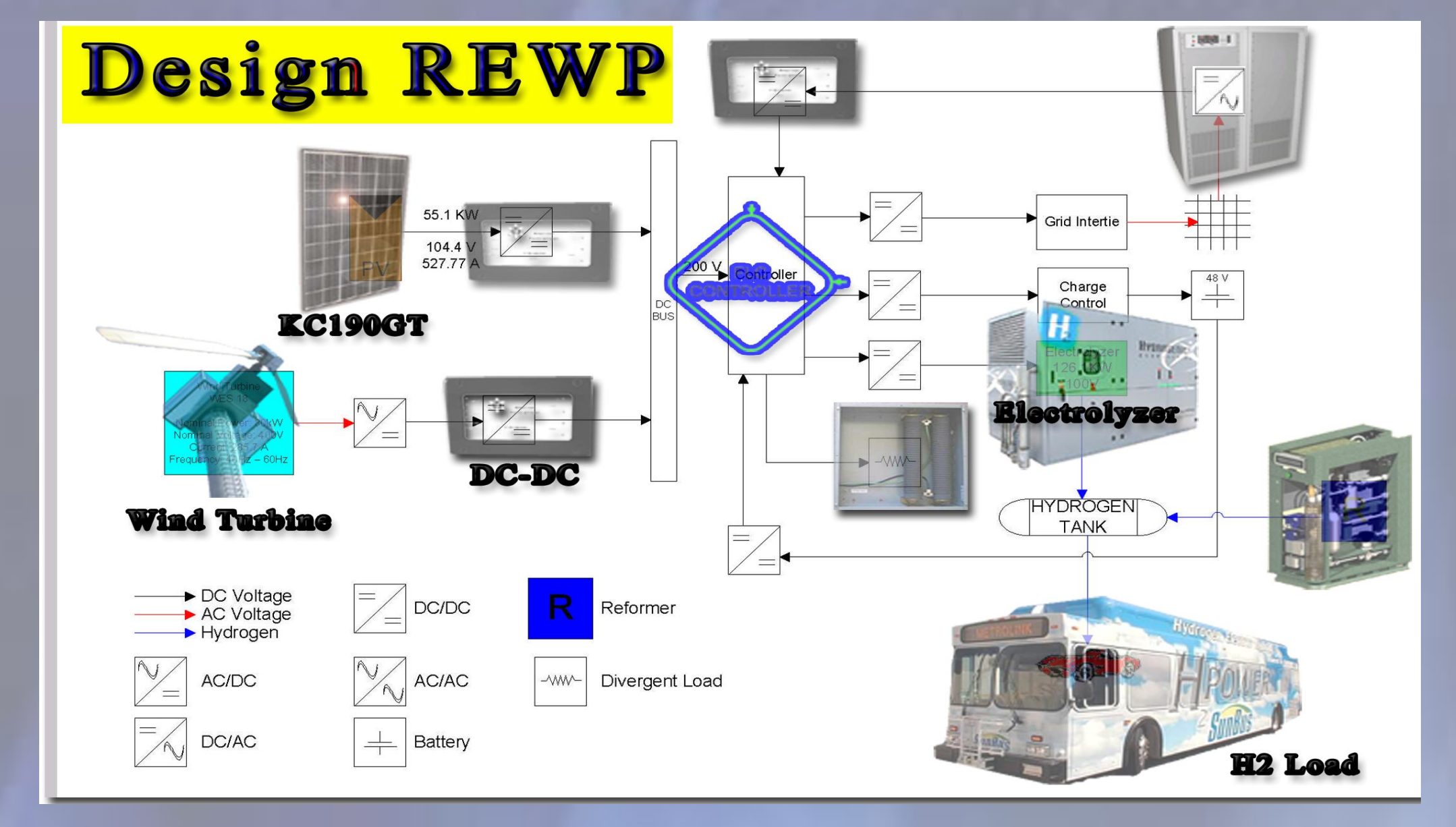


Future Tasks

- Green Tags system
- Grid Intertie issues
- Development Costs
- City of Chicago Standards and Regulations to be followed
- Incentives for Renewable Energy power systems for the State of Illinois, grants, subsidies and legal fees

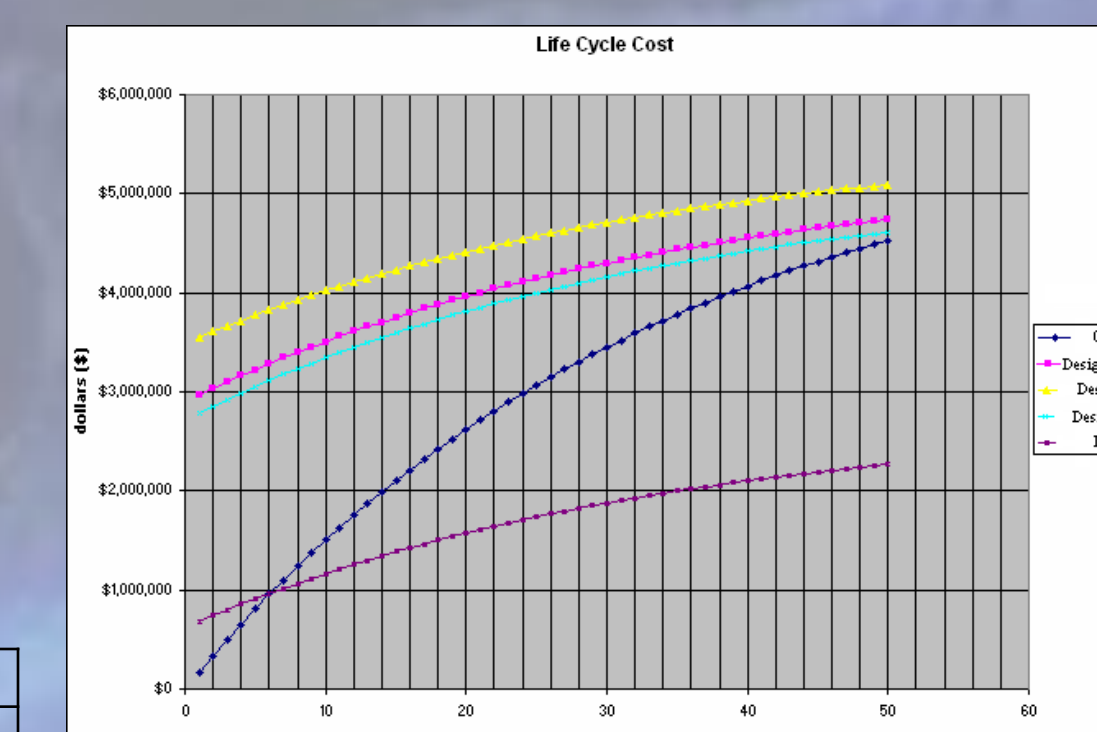
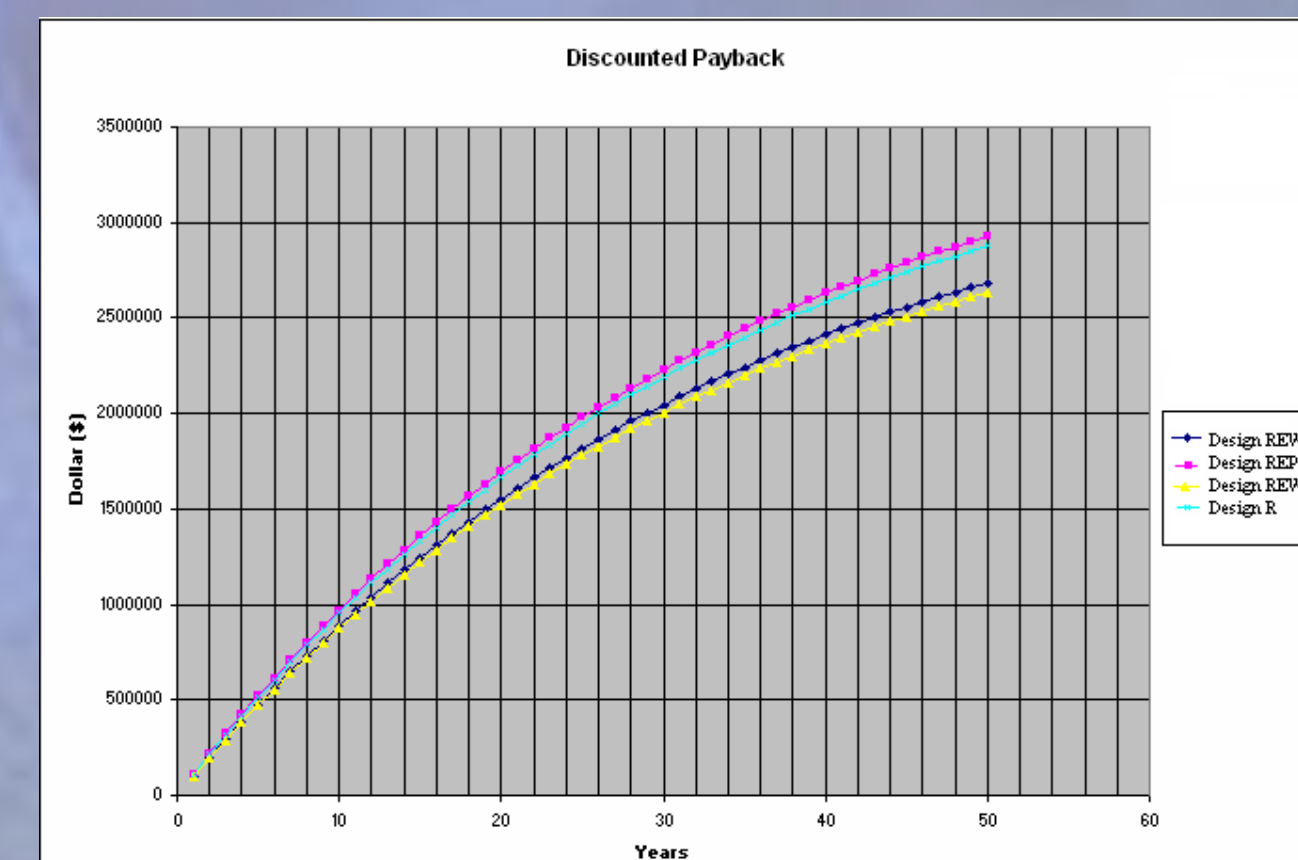
Recommended Design ONE: REWP

- Contains the following components:
 - Hydrogen Reformer (R)
 - Electrolyzer (E)
 - Wind Turbine (W)
 - P.V. Arrays (P)
- Utilizes most renewable energy sources
- Is the most promotional value



Economic Analysis Methods Utilized

- Simple Payback (SPB)
- Discounted Payback (DPB)
- Life Cycle costs (LCC)



	Initial Cost	Annual Costs	Pros	Cons
Design REWP	\$2,893,800	\$71,700	Seasonal Independent, Utilizes most renewable energy resources, high promotional value	Cost Prohibitive
Design REP	\$3,489,300	\$62,300	Less Expensive	Does not have PV panels, more demand other sources
Design REW	\$2,716,200	\$73,700	Independent of winds	Over dependence on PV Arrays
Design R	\$616,600	\$64,300	Least expensive, profitable, least payback period, less dependence on Sun and Wind	Doesn't use many renewable sources

IPRO 301 Team Members – Fall 2005

Group Leader	Teaching Assistant	Faculty Advisor
Daniel Charles	Anand Sathyan	Said Al-Hallaj
	Kris Kiszynski	
Design	Economic Analysis	Poster Design
Chinedu Igbokwe *	Elijah Stine*	Edgar Becerril
Carlos Ceballos	Daniel Charles*	Syed Ahmed
Edgar Becerril	Jeffrey Cecil	Srinivas G
Javier Martinez	Sandhya Duggirala	
Matthew Furukawa		
Srinivas Gundugurti		
Syed Ahmed		
		Webmaster
		Daniel Charles*

* Team Leader