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Volunteers Leading Technology

A Case Study: Chewonki Renewable Hydrogen Project

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Agenda

- Project Overview
- Accomplishments
- Funding
- Volunteer Labor
- Acknowledgements
- What's Next

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Project Overview: Goals

- Stimulate and support existing Maine businesses,
- Create strategically important connections among firms involved in the Renewable Energy and Distributed Generation segment in Maine, and
- Provide a demonstration for educational institutions, research laboratories and other organizations to use in their support of the Environmental Technologies sector.

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Project Overview: Accomplishments

- Create new relationships among firms
- Partners have developed new skills
- Partners gaining visibility
- New business opportunities for existing businesses (eg, Grand Central Station; ability to bid for other projects)

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Project Overview: Accomplishments

- System unveiled: August 28, 2006
- Working installation of electrolyzer, storage, fuel cells, control system and balance of plant
- Tours of the system
- Introduction to Hydrogen brochure (over 1500 given out to date)
- Introduction to Hydrogen workshop (offered 5-10 times in the past 2 years)
- Design for Hydrogen workshop (first offering: Nov. 15, 2006)

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Project Overview: Accomplishments

- Two (now three) NHA presentations
- Fuel Cell 2006 conference presentation
- Governor Baldacci's executive order creating Maine Hydrogen Energy and Fuel Cell Partnership

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Funding

- Primary grant: Maine Technology Institute “Cluster Enhancement Grant” ($80,000)
  - Designed to enhance business clusters as opposed to individual businesses
  - Focus is on existing businesses, rather than new startups
  - Project goals designed to meet funding expectations
- Secondary grant: Maine Renewable Resources Matching Fund ($40,000)
  - Checkbox to donate $1 on power bills
  - Awarded by MTI to supplement qualifying cluster grants

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Funding

- Individual donations & small grants ($40,000)
- Volunteer labor: Not included as a part of the matching funding (estimated: $245,000)
  - To increase the odds of getting the grant (conservative accounting)
  - To simplify the accounting (eliminate time tracking)
  - Reduce risk to project due to people not meeting commitments

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Labor Force

- Hired Labor
  - About 15% of total estimated labor costs ($38,000)
- Volunteer Labor
  - About 85% of total estimated labor costs ($207,500)
  - Mixture of individuals (mostly HEC members) and companies (mostly engineering firms)
  - Nearly 100% of technical labor
- Nearly all hired labor also volunteered some hours

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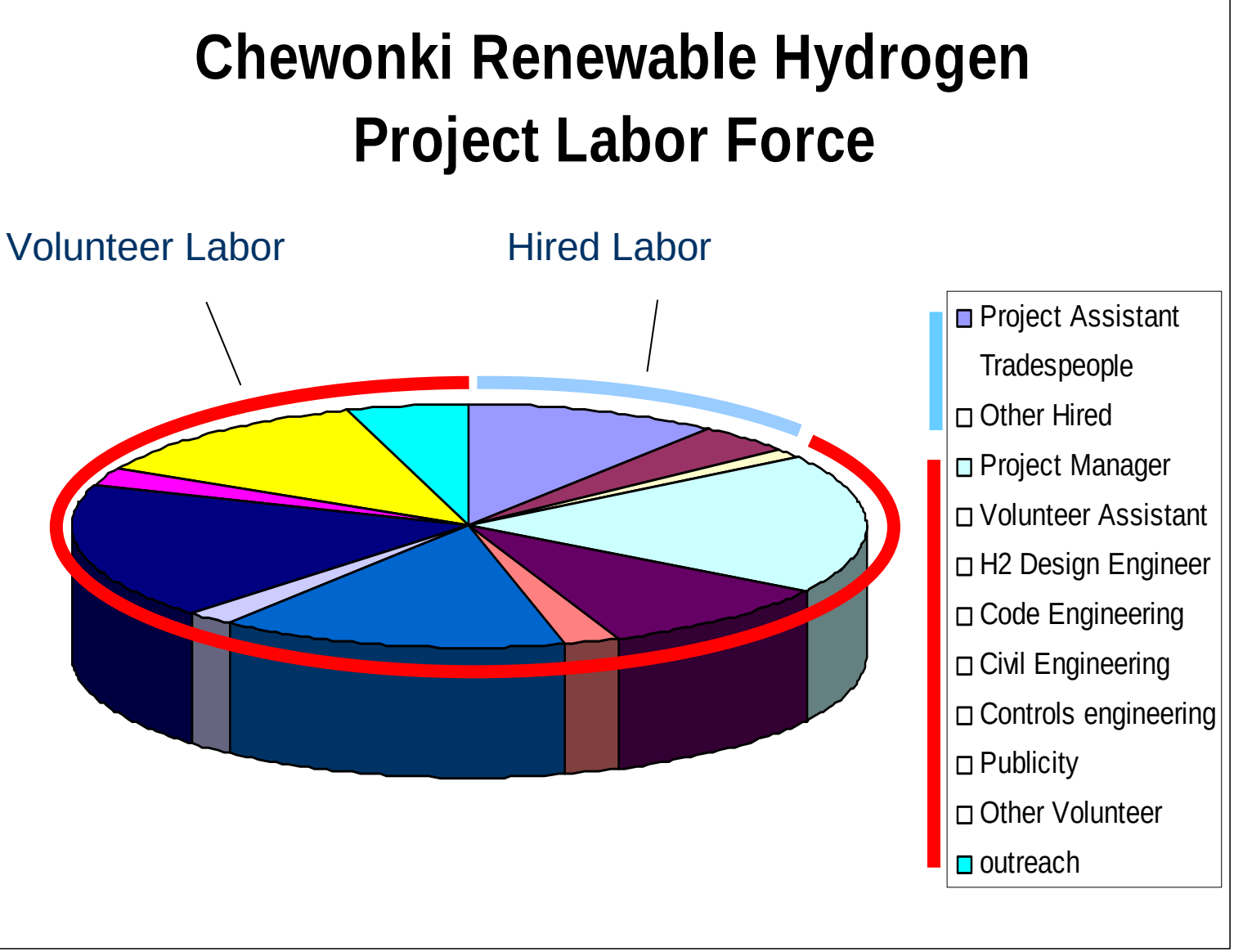
Chewonki Renewable Hydrogen Project Labor Force



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Volunteer Labor

- Only carrots, no sticks
  - "You're Fired!" – not quite the same
  - Need to plan for a certain amount of turnover
  - Need to expect some people not to live up to expectations
  - At times, need to look for replacements
    - We had an example where I lined up a replacement – and just doing that motivated the volunteer who wasn't meeting his obligations!
    - Which points out – need to find a replacement who will agree to join – but understand they might not be needed
  - Need to understand **why** people are volunteering (tend your carrots)

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Volunteer Labor

- Why volunteer?
  - Individuals, companies; every one is different
  - Some reasons
    - Doing good for the world
    - Gain marketable experience; develop new skills
    - Develop valuable relationships
    - Marketing/publicity
    - Peer pressure or told to participate
    - Looking to belong

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Volunteer Labor

- Motivating volunteers
  - Provide specific tasks
  - Allow freedom
  - Ensure their voices are heard; opinions are respected
  - Make project's final goals very clear (what are we trying to accomplish)
  - Celebrate milestones
  - Recognize individuals within the team
  - Recognize the team as a whole
  - Involve in planning; increase ownership in project & results

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Volunteer Labor

- Motivating volunteers
  - At least one leading partner with a well defined, established mission – volunteers know they are working for a greater cause
    - EG, A university or charitable foundation
    - Ours was The Chewonki Foundation
  - Critical mass of expertise helps bring in more
  - Key leaders set commitment levels (you set the example)

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Volunteer Labor

- Need to be flexible with time, to accommodate volunteers
  - One day delays are always really at least one-week delays, sometimes turn into one-month delays
  - But, can't delay too much, or else volunteers burn out or move on to their next commitment (this was a **big** challenge)
- Delays can introduce other cash costs

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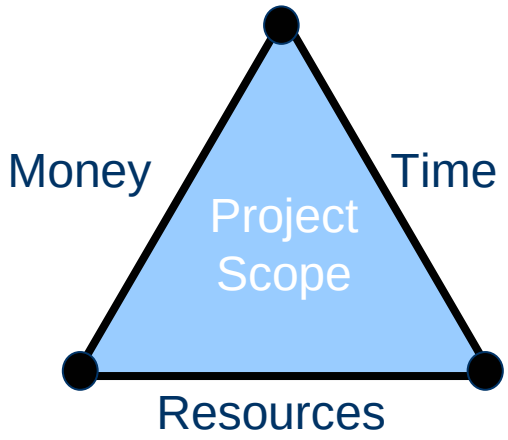
Volunteer Labor

Project management triangle



- Cost was fixed, time, resources and scope had to vary (mostly time!)
- Original timeline: 1 year; final timeline: 3 years

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Acknowledgements

- **Principle Designers:** Michael Metcalfe, Bob Ingersoll (Hydrogen Energy Center)
- **Code Experts:** Fire Risk Management, PM&C Engineering
- **Mechanical Design:** Oest Associates
- **Control Systems:** Results Engineering
- **Project Management:** Hydrogen Energy Center, The Chewonki Foundation

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Acknowledgements

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- **Hydrogen Plumbing:** Mike Metcalfe, Maine Oxy
- **Publicity:** HEC, Chewonki, Maine Technology Institute
- And many more…

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What's Next

- Continue holding Intro to Hydrogen Workshops
- Begin to hold Design for Hydrogen Workshops
  - 4 hour seminar for technical professionals
  - www.DesignForHydrogen.com
- Wallace Avenue Sustainable Hydrogen (WASH) Project
  - Can we cost-effectively generate hydrogen from renewable resources for industrial markets?
  - Goal: build the infrastructure to supply an existing market, then expand for other markets (transportation) later
- New ventures encouraged by Maine Hydrogen Energy and Fuel Cell Partnership

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More Information

- Project Website: www.chewonkih2.org
- HEC: www.HydrogenEnergyCenter.org
- Chewonki: www.chewonki.org

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Q & A