



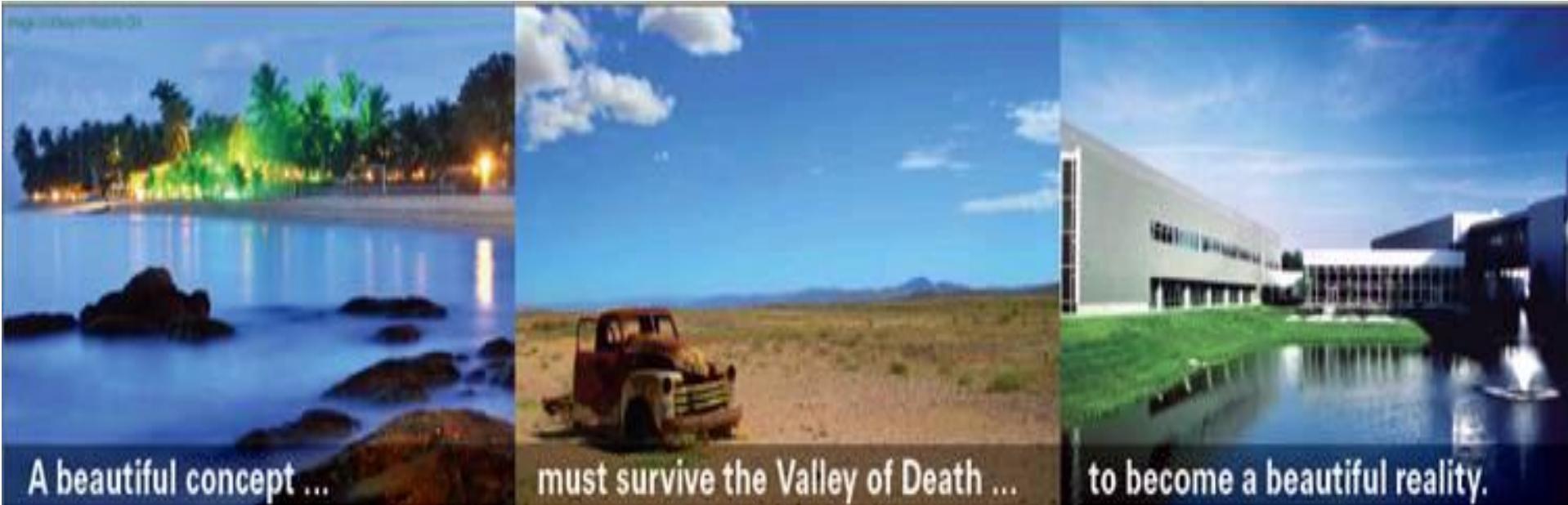
# National Academy of Sciences Regional Approaches to Urban Sustainability: A focus on Portland

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Senior Vice President  
Managing Director, Urban Programs  
CH2M HILL  
May 29, 2013*

# Integrating Research into Urban Sustainability Strategies

- Rapid Deployment of Research
- The Power of Social Networking to Create Sustainable Cities
- Revitalizing Singapore's Waterways

# Rapid Deployment of Research and The Valley of Death



A beautiful concept ...

must survive the Valley of Death ...

to become a beautiful reality.

## City Scale Technology Deployment



# Overcoming the Valley of Death through a Structured Approach

Research & Development

Pilot

Production

Investigation

Feasibility

Development

Introduction

Growth

Maturity

University  
Partners

- Develop Prototype

- Production Prototype
- Pilot Demonstration

- Commercial Design
- Scale Up to System Demonstration

- Scale up Product Production
- Replicate System Deployment

National  
Laboratories

- Conduct Tests

Industrial and Advanced Technology

Industrial Laboratory  
Collaborators

Infrastructure  
Engineering Groups

# Overcoming the Valley of Death through a Structured Approach

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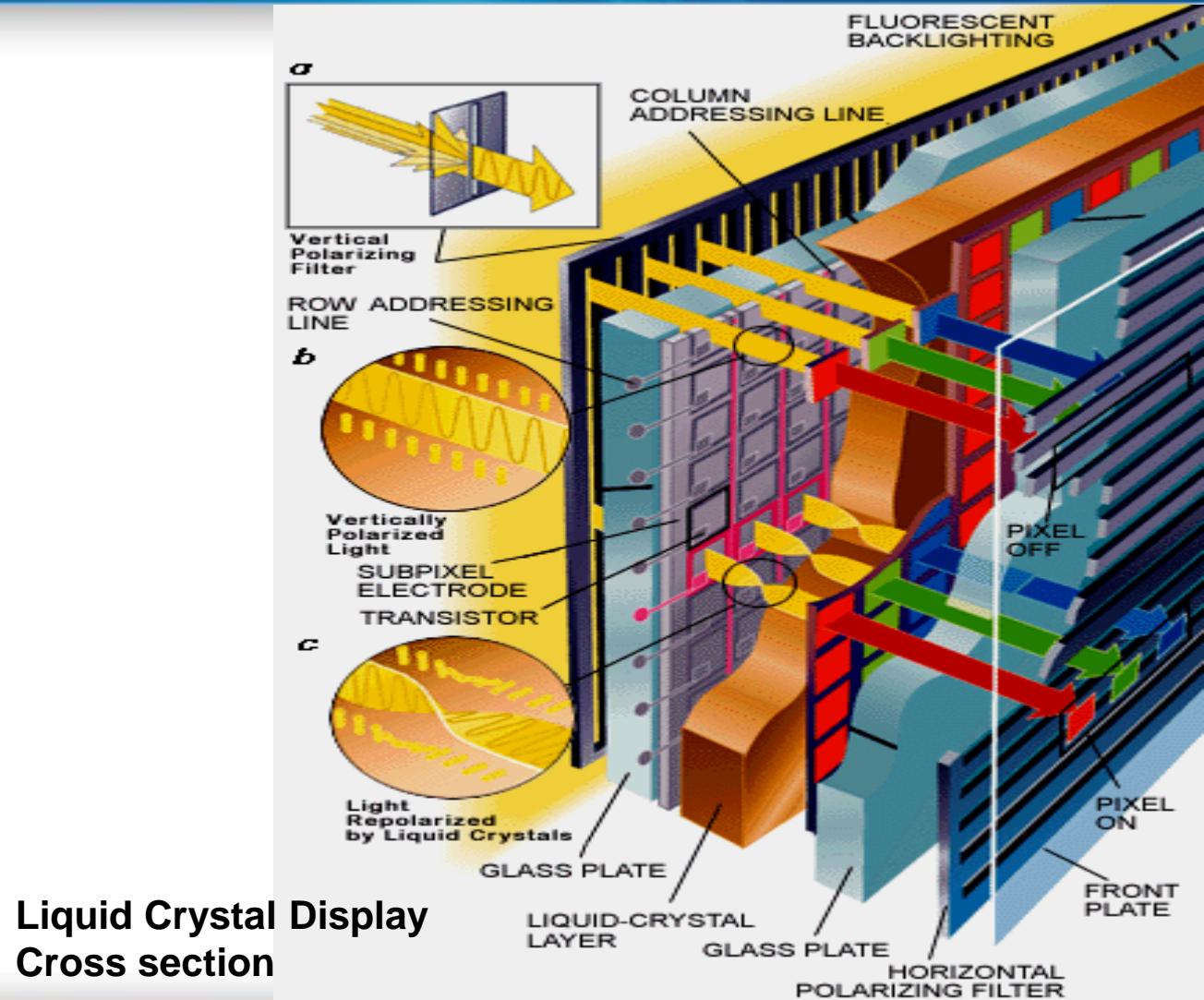
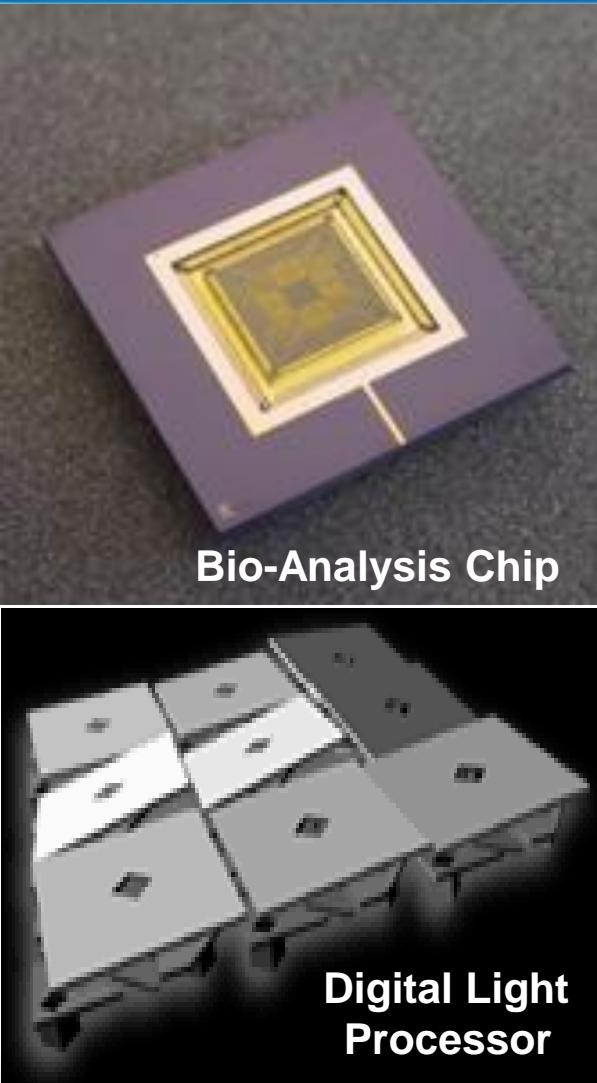
Industrial and Advanced Technology

Industrial Laboratory  
Collaborators

City/State  
Partners

Infrastructure  
Engineering Groups

Staff knowledge on new technology that is effective and can be scaled up



# Local Collaboration using a Structured Approach Produces Results

- Oregon State University
- Portland State University
- Pacific Northwest National Laboratory
- Oregon Department of Transportation
- TriMet
- Local Industrial Clients (Confidential)





# Nanomanufacturing at the ONAMI Microproducts Breakthrough Institute

B. Paul, C. Chang, V. Remcho,  
D. Palo, L. Kannberg,

December



CH2M HILL has  
performed as an  
MBI collaborative  
partner on selected  
projects



**CH2MHILL**

# Low Energy and Low Cost Desalination of Sea Water using Micro-channels



Intelligent Transportation Systems increase efficiency and improve options for motorists



# The Power of Social Networking to Create Sustainable Cities

**Urban EcoMap SAN FRANCISCO**

Home Explore Act Resources Amsterdam

Working Together to improve San Francisco's Environment  
Understand the challenge. Become part of the solution.

**What's The Problem**  
We hear a lot about greenhouse gas emissions and the need to reduce them. The first step is to understand where they originate.

**Jim Likes to Cook and Compost**  
Garbage decking in landfills is responsible for 20% of our greenhouse gas emissions. By keeping food waste and compostable items out of the trash, Jim is part of the solution. **Aim for You!**

**Transportation** Do It Now! Want some quick suggestions for how you can reduce your environmental footprint? See what's most important to you, and we'll show you the best option.

**Energy** See What's Happening in Your Neighborhood Use our interactive map to better understand the environmental impact of your neighborhood, relative to others. Compare two.

**Waste** Are You Part of the Solution? Use the interactive Action Planner to build an environmental action plan that's just right for you. Or use it to

**1 Set Your Goals** Move the sliders to adjust your starting point

**2 Plan Your Actions** Identify actions that you will take in each of the following areas

**Transportation**

- Bike or Walk to Work
- Bike or Walk for Daily Travel to Town
- Carpool
- Drive a Hybrid
- Take Public Transit for Daily Travel to Town
- Walk or Bike Share Programs for Regional Travel

**Energy**

- Cut Heat/Clothing
- Do Not Use Heating and Cooling
- Flip the Switch and Unplug
- Hang Clothes to Dry
- Install Double Paned Windows
- Install Energy Star Appliances
- Install Programmable Thermostats
- Insulate Water Heater
- Run Dishwasher
- Washing Machines with Full Loads
- Take Short Showers (5 minutes)
- Upgrade Light Bulbs

**Waste**

- Compost Kitchen Food and Table Scraps
- Compost Yard and Garden Waste
- Recycle Plastic
- Recycle Aluminum
- Recycle Cardboard
- Recycle Glass
- Recycle Paper, Newspapers, and Magazines
- Reuse Containers, Bottles, etc.

**3 See Your Results** Chart your contribution

My EC2E Impact

Take Action | Discard



<http://www.envisioncharlotte.com/>

<http://urbanecomap.org/>



Learn How

You Can Make a Difference

**2,961,455**

Kilowatt Hours

Installed Capacity of Green Energy Projects



**336,089**

Square Feet

Impervious Surface Treated

TOW.

Smart Water Now.

Every year downtown Charlotte office buildings use about **110,000,000** gallons of water for landscaping and other related uses

Smarter Water Use in Charlotte

Water conservation a fundamental part of Envision Charlotte's program to make Charlotte the Greenest Urban core in the country. We strongly believe in the link between sustainability and a vibrant economy, so being green not only is the right thing to do, it makes great business sense. Envision Charlotte's water program is designed to reduce the consumption of water by 20% in participating buildings over the next five years. We'll do this by tracking and reporting water usage, then working with owners and occupants to take simple steps to reduce consumption and improve efficiency.

PARTNERS

CH2MHILL. Ifre  
SIEMENS

Learn more at:  
[ENVISIONCHARLOTTE.COM/WATER](http://ENVISIONCHARLOTTE.COM/WATER)

<http://greenup.dc.gov/>

**CH2MHILL.**

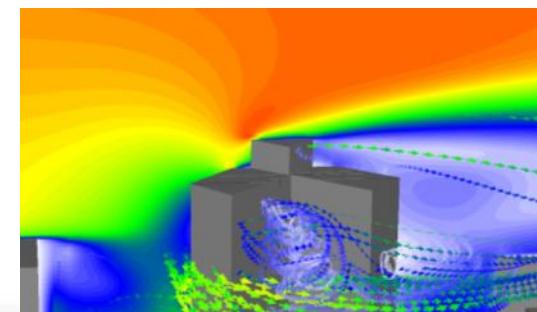
# Energy Mapping: a portal to visualizing solar and wind energy

*DOE selected CH2M HILL to help 25 U.S. cities accelerate the adoption of solar energy through the Solar America Cities Program. San Francisco provided leadership for the public to make their own decisions.*

- View their rooftops online
- Calculate the available area for solar panels and urban wind
- Estimate the solar/wind energy that could be generated
- Estimate electricity savings and GHG emission reductions
- See which neighbors have adopted solar/wind

<http://sfenergymap.org/>

<http://greenenergy.reno.gov/energy/>



# Revitalizing Singapore's Waterways – ABC Waters Programme





# The Central Catchment – Adopting the Watershed Approach

## Key Drivers

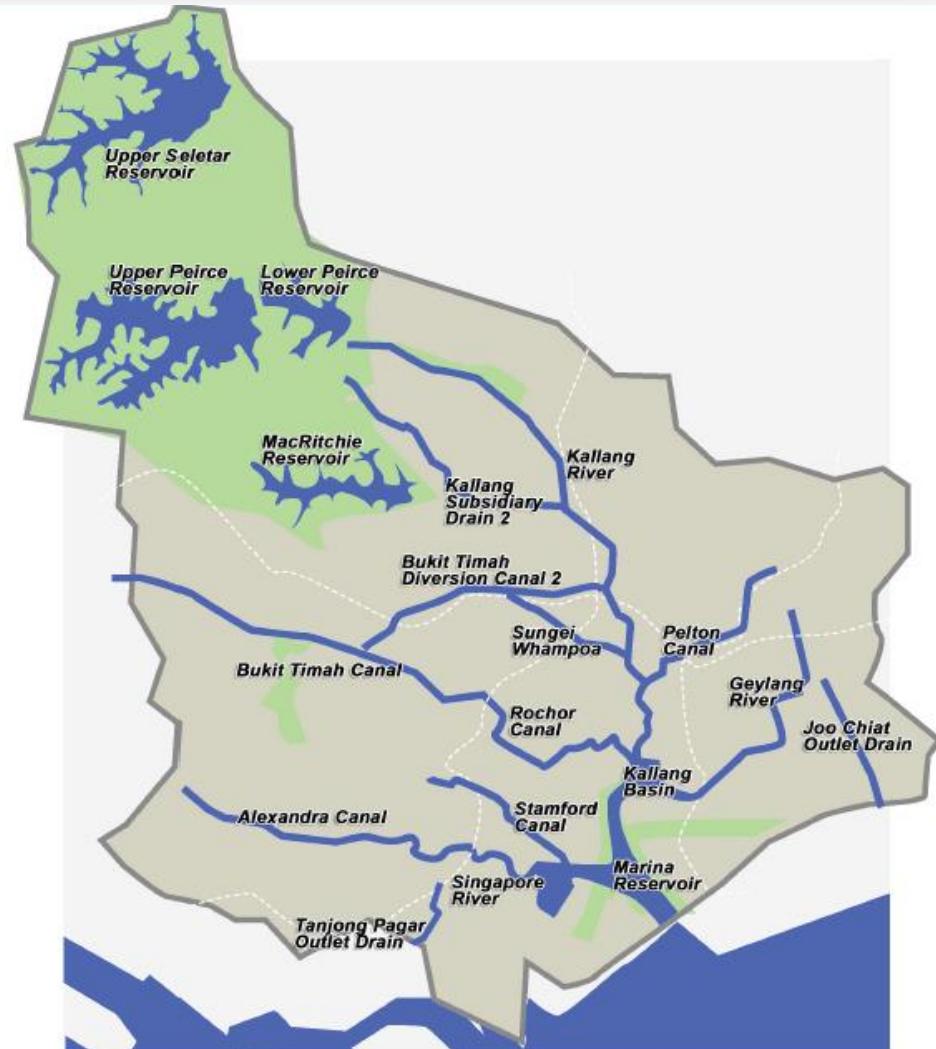
- Water Resource
- Water Quality
- Land Use Integration
- Community Stewardship
- Sustainability



# The Central Catchment

## Goals

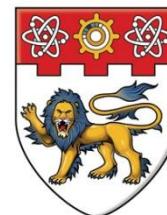
- Go beyond functional uses
- **Active**, dynamic, full of life and activities
- **Beautiful**, aesthetically pleasing
- **Community bonding**
- Improve quality of life
- Education, to impart value of keeping our water catchments clean
- Long-term improvement in water quality



...and we made streams & wetlands...



Collaborative integration of scientists, universities, NGOs, public agencies and the private sector is key to solving district, regional and large-scale sustainability issues



**NANYANG  
TECHNOLOGICAL  
UNIVERSITY**

