

Clean Tech Update



Clean Tech Cluster Analysis for the Puget Sound Region

EDD Board of Directors

January 6, 2010

Background

- Data last updated in 2004 as the “environment and alternative energy” cluster
- Defined as 6 industry codes with some 2,200 jobs
- Since then, clean tech has advanced as more established and better understood industry cluster
- Need for more accurate and timely information about the cluster

Purpose & Contents of Report

Purpose: To provide a snapshot of the clean tech industry cluster in the central Puget Sound region

Contents:

- Section I - Clean tech definitional framework
- Section II – Economic analysis
- Section III - Venture capital investment trends
- Section IV – Clean tech ecosystem, policy environment and regional actions

Defining Clean Tech

Clean tech is “a diverse range of products, services, and processes that harness renewable materials and energy sources, dramatically reduce the use of natural resources, and significantly cut or eliminate emissions and wastes.

- *Clean Edge*

Defining Clean Tech

The framework developed for the clean tech cluster has six major components:

- Clean Energy
- Green Building
- Smart Grid
- Transpo Vehicles and Alternative Fuels
- Advanced Materials & Env'l Products
- Env'l Remediation and Pollution Prevention

Methodology

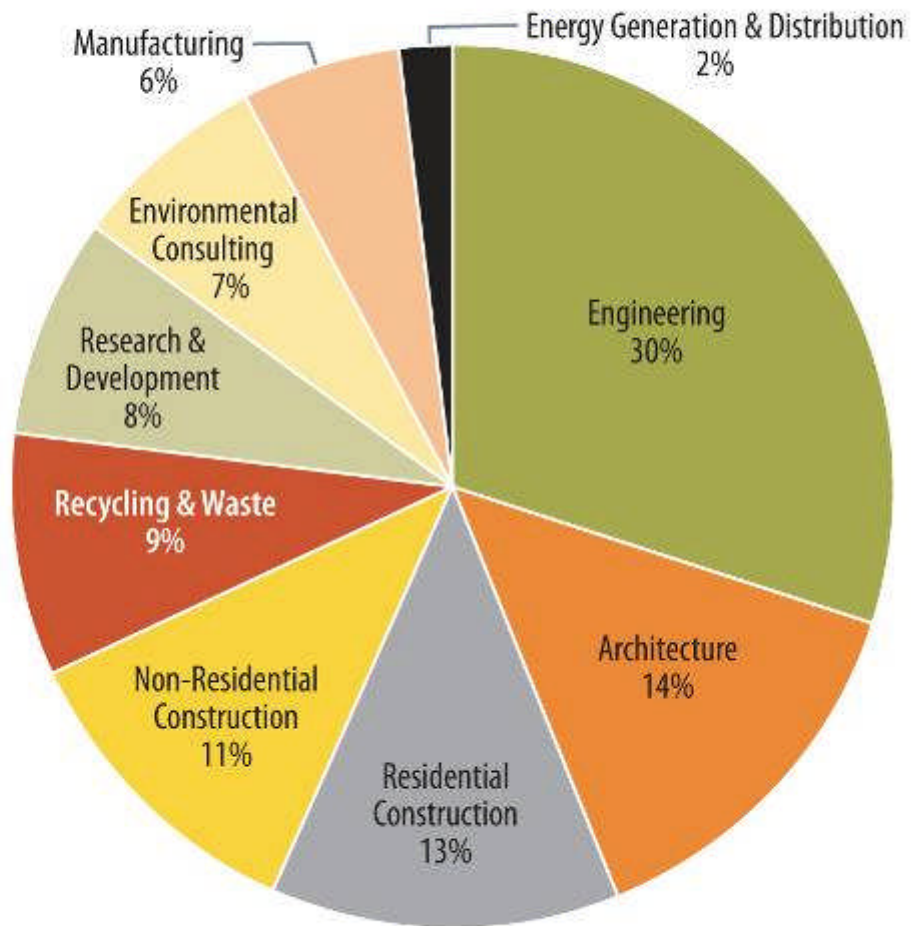
- **Bureau of Labor Statistics** - Data is imperfect for measuring clean tech, but is a comprehensive census-based source of employment data
- **2008 Green Jobs Survey** (WA Employment Security Dept) - Used to help identify clean tech industries and proxy shares for some industries.
- Clean tech is green, but not all green is clean tech
- Industry categories based on NAICS categories (different from definitional framework)
- Cluster definition does not capture every clean tech industry but focuses on measurable areas of concentration

Nine Industry Categories Identified

Energy Gen & Distrib'n	Residential Construction	Non-residential Construction
Manufacturing	Architectural Services	Engineering Services
Environmental Consulting	Research & Development	Recycling & Waste

Employment Distribution by Industry

**FIGURE 2. Clean Tech Employment Distribution by Industry:
Puget Sound Region, 2008**



Engineering	6,900
Architecture	3,200
Res Construction	3,000
Non-res Construction	2,600
Recycling & Waste	2,000
R&D	1,900
Env'l Consulting	1,600
Manufacturing	1,290
Energy Gen & Distbn	470
TOTAL	22,900

Source: Bureau of Labor Statistics, PSRC Covered Employment Dataset.

Past Employment Growth, 2002-2008

INDUSTRY	AVERAGE ANNUAL GROWTH RATE
Residential Construction Activities*	5.4%
Engineering Services*	4.9%
Environmental Consulting Services	4.9%
Non-Residential Construction	3.7%
Architectural Services*	3.6%
Research and Development*	3.3%
Manufacturing*	2.5%
Energy Generation and Distribution*	2.0%
Recycling and Waste	1.8%
Total Clean Tech Employment	4.2%

Total Employment

1.9%

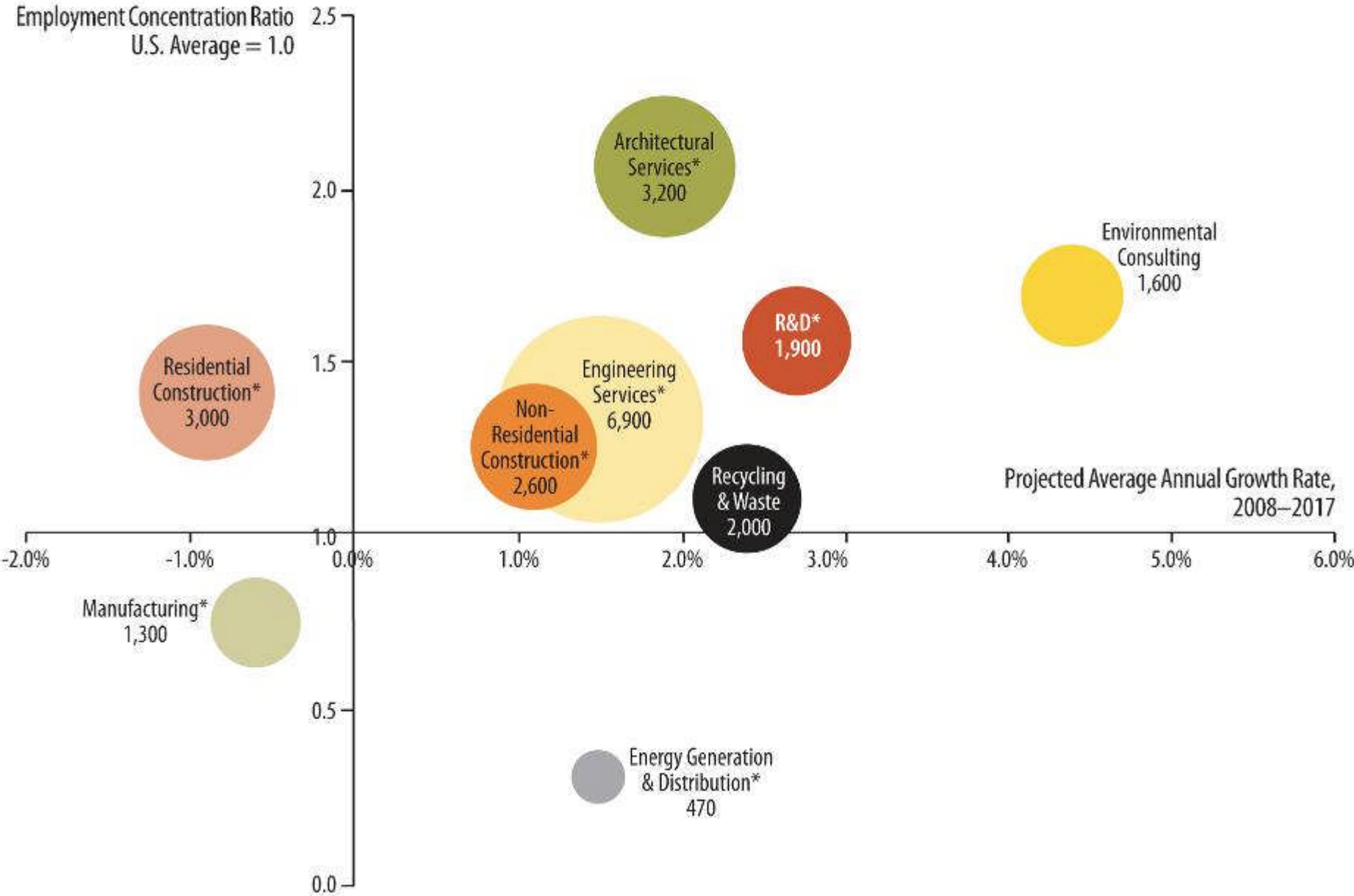
Projected Employment Growth, 2008-2017

INDUSTRY CATEGORY	AAGR* 2008-2017
Environmental Consulting	4.4%
Research and Development	2.7%
Recycling and Waste	2.4%
Architectural Services	1.9%
Engineering Services	1.9%
Energy Generation and Distribution	1.5%
Non-Residential Construction	1.1%
Manufacturing	-0.6%
Residential Construction	-0.9%
Total Clean Tech Employment	1.4%

Total Employment

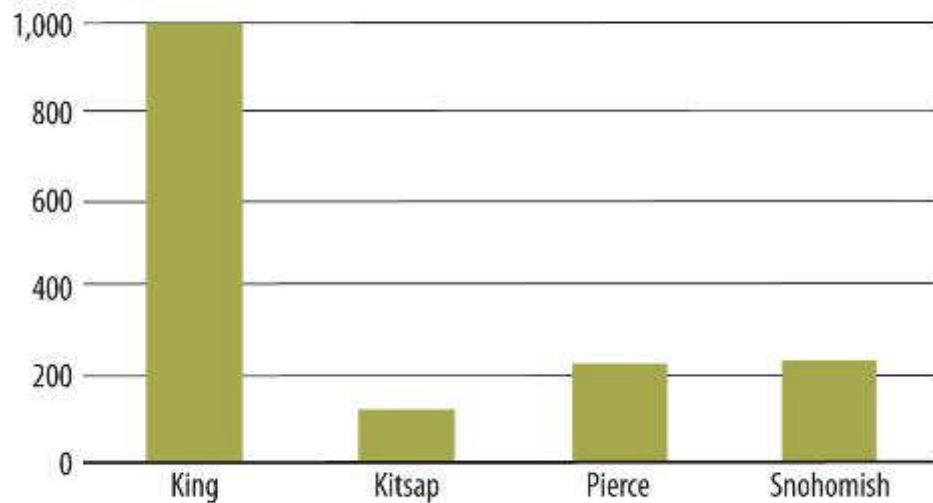
1.0%

FIGURE 4. Clean Tech Cluster Bubble Chart: Puget Sound Region, 2008–2017
Employment Size, Concentration, and Projected Growth Rate from 2008–2017



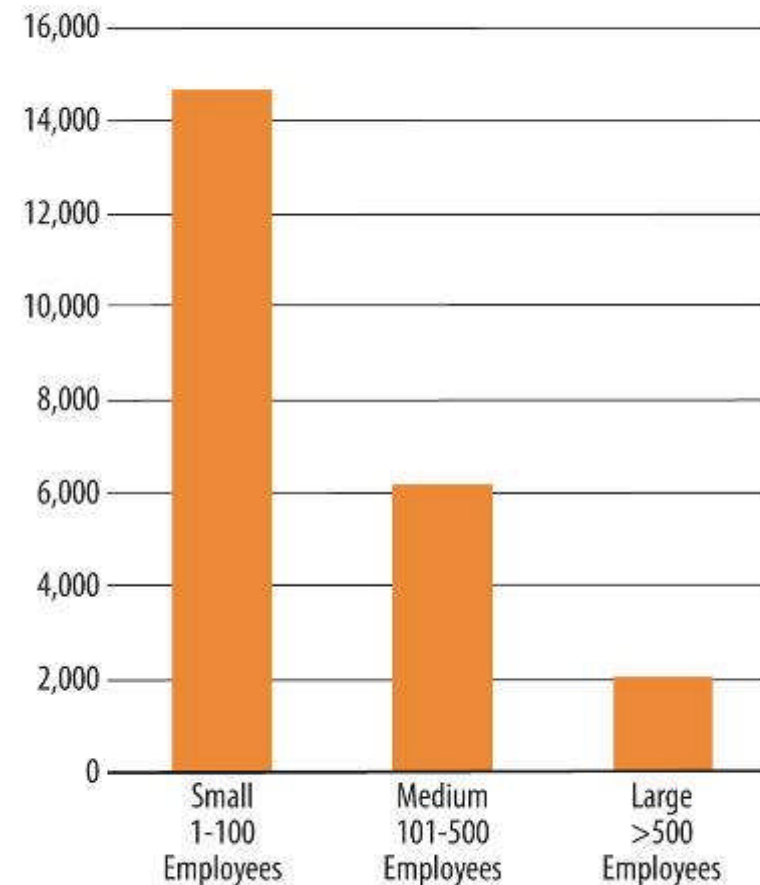
Clean Tech Businesses

FIGURE 5. Clean Tech Business Establishments: King, Kitsap, Pierce and Snohomish Counties, 2008



Source: Bureau of Labor Statistics, PSRC Covered Employment Dataset.

FIGURE 7. Clean Tech Employment by Size of Firm: Puget Sound Region, 2008



Source: Bureau of Labor Statistics, PSRC Covered Employment Dataset.

Clean Tech Occupations

Refer to page
18 of report to
view table

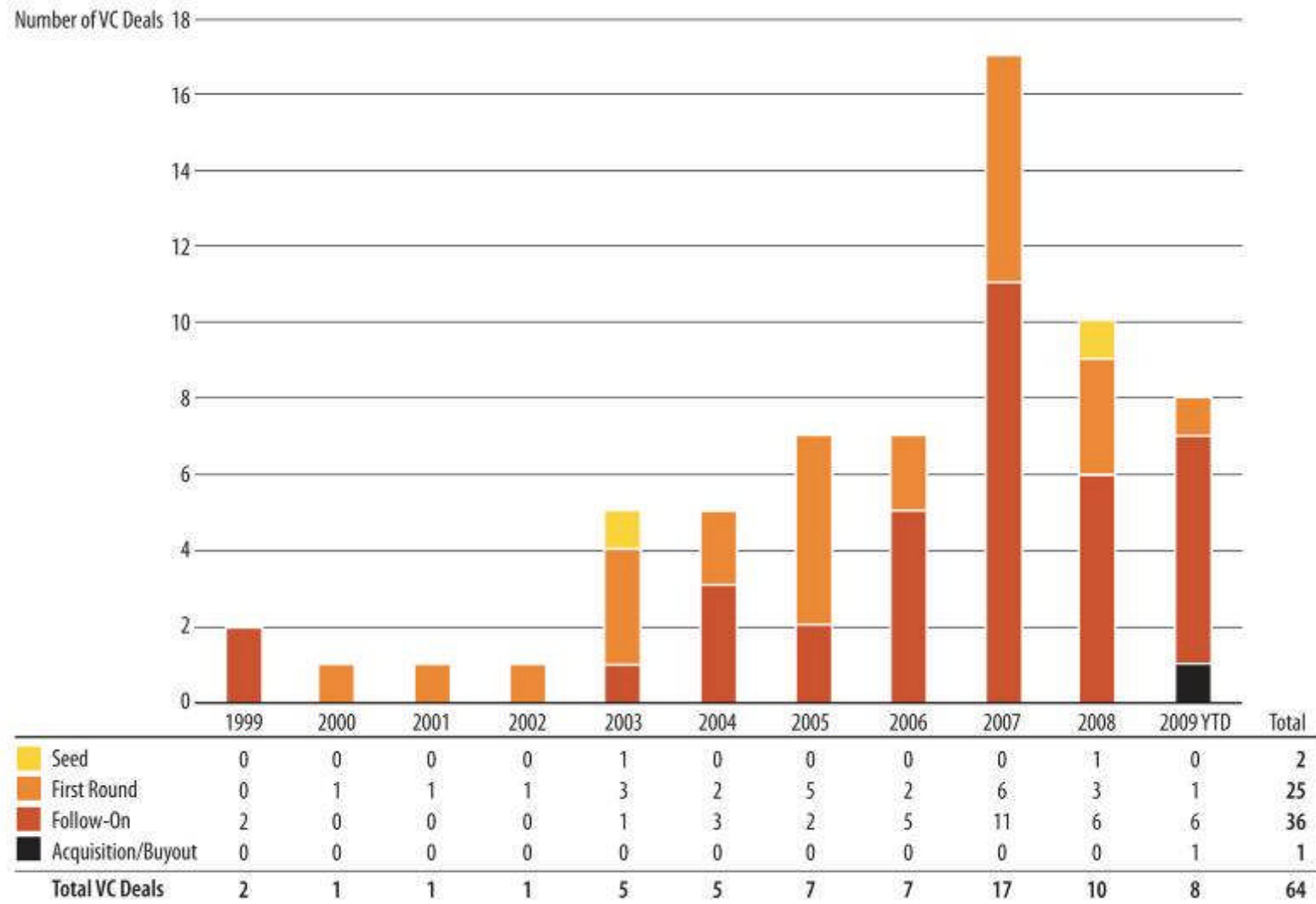
TABLE 5. Selected Clean Tech Cluster Occupations: Puget Sound Region, 2008–2009

SOC CODE	OCCUPATION	MEDIAN WAGE	EDUCATIONAL ATTAINMENT OR TRAINING	PROJECTED EMPLOYMENT GROWTH 2006–2016
11-9041	Engineering managers	\$105,430	Bachelor's or higher degree, plus work experience	7.3%
15-1031	Computer software engineers, applications	\$79,780	Bachelor's degree	44.6%
17-2071	Electrical engineers	\$75,930	Bachelor's degree	6.3%
11-9021	Construction managers	\$73,700	Bachelor's degree	15.7%
19-2042	Geoscientists, except hydrologists & geographers	\$72,660	Master's degree	21.9%
17-2081	Environmental engineers	\$69,940	Bachelor's degree	25.4%
17-2141	Mechanical engineers	\$69,850	Bachelor's degree	4.2%
17-2051	Civil engineers	\$68,600	Bachelor's degree	18.0%
17-1011	Architects, except landscape and naval	\$64,150	Bachelor's degree	17.7%
19-2041	Environmental scientists and specialists, including health	\$56,100	Master's degree	25.1%
47-1011	First-line supervisors/managers of construction trades and extraction workers	\$53,850	Work experience in a related occupation	9.1%
49-9051	Electrical power-line installers and repairers	\$50,780	Long-term on-the-job training	7.2%
17-3023	Electrical and electronic engineering technicians	\$50,660	Associate degree	3.6%
17-3011	Architectural and civil drafters	\$41,960	Postsecondary vocational award	6.1%
17-3022	Civil engineering technicians	\$40,560	Associate degree	10.2%
47-2073	Operating engineers and other construction equipment operators	\$36,890	Moderate-term on-the-job training	8.4%
47-2031	Carpenters	\$36,550	Long-term on-the-job training	10.3%
47-4041	Hazardous materials removal workers	\$35,450	Moderate-term on-the-job training	11.2%
53-7081	Refuse and recyclable material collectors	\$28,970	Short-term on-the-job training	7.4%
47-2061	Construction laborers	\$26,320	Moderate-term on-the-job training	10.9%

Source: BLS Occupational Projections and Training Data, 2008–2009 Edition.

Venture Capital Deals

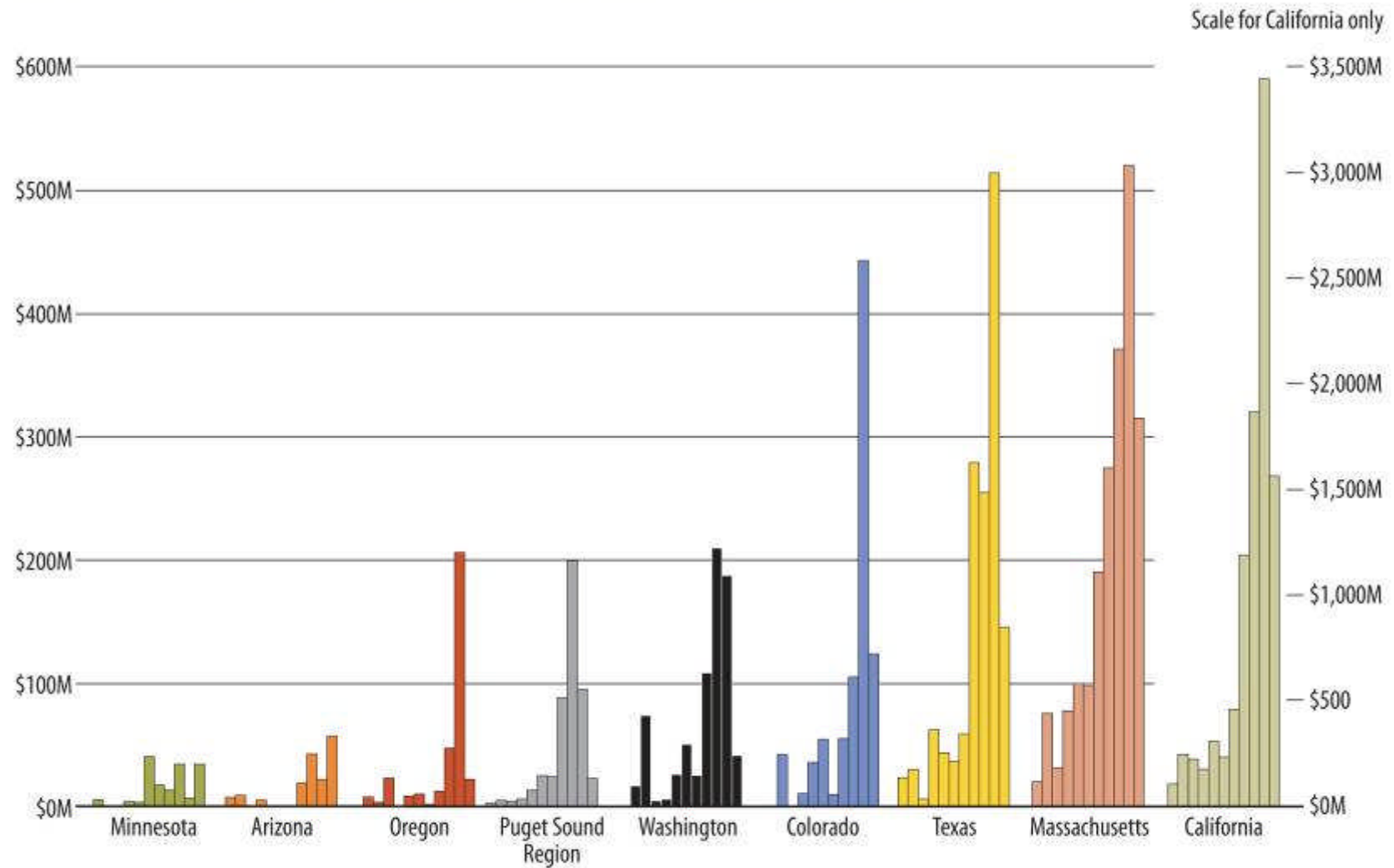
FIGURE 11. Clean Tech VC Deals by Financing Stage: Puget Sound Region, 1999 – Q2 2009



Source: The Cleantech Group; Berk & Associates, 2009.

VC by State

FIGURE 12. State Comparisons of Clean Tech VC Dollars, 1999 – Q2 2009



Source/Note: The Cleantech Group; Berk & Associates, 2009. 2009 year-to-date includes Q1 and Q2.

Conclusions

- Green building (which includes energy efficiency) and environmental remediation industries are areas of greatest competitive advantage
- Known data limitations mean smart grid and biofuels are difficult to quantify
- Future updates must consider new data sources and evolution of the industry

Next Steps / Current Initiatives

- Brookings Metropolitan Business Plan on Energy Efficiency Industry
- Clean Energy Leadership Council
- Washington Clean Technology Alliance (WCTA)

Questions?

Contact: Joan Chen
 Regional Projects Manager
 jchen@psrc.org
 206.389.2889