

**1-26-10
PNWER Regional
Collaboration on
Economic
Revitalization**

<target><bill></bill><subject>1-26-10 PNWER Regional
Collaboration on Economic
Revitalization</subject><comm>HEDC26</comm></target>

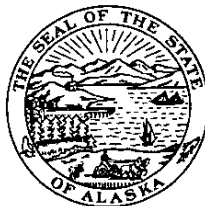
ALASKA STATE LEGISLATURE

ECONOMIC DEVELOPMENT, TRADE & TOURISM COMMITTEE

Representative Jay Ramras
Chairman

Phone: (907) 465-3004
Toll Free: 877-465-3004
Fax: (907) 465-2070

Representative_Jay_Ramras@legis.state.ak.us
1292 Sadler Way, Suite 324
Fairbanks, AK 99701



Committee Members:
Representative Mike Chenault
Representative Nancy Dahlstrom
Representative Mark Neuman
Representative Kyle Johansen
Representative Chris Tuck
Representative Joule
Representative Holmes

State Capitol, Room 120
Juneau, Alaska 99801

COMMITTEE SCHEDULE

JOINT

House Economic Development, Trade & Tourism Committee Agenda

AND

Senate World Trade, Tech. & Innovations

Please Note Change of Meeting Time and Location

Tuesday, January 26th, @ 10:00 a.m. In House Finance Committee Room

+ PNWER Regional Collaboration on Economic Revitalization

- Ian Burkheimer
 - Arctic Caucus
- Matt Morrison, Executive Director of PNWER
 - Energy Horizons
 - Smart Grid Technology
 - Regional Innovations Strategy
- Ian Burkheimer
 - 2010 Olympics Update
- Richard Marz, MLA, Alberta
 - Oil Sands and Pipeline Issues

- * First Hearing in First Committee of Referral
- + Teleconferenced
- = Bill was previously Heard/Scheduled

ALASKA STATE LEGISLATURE



SENATOR LESIL MCGUIRE

Chair, Senate Special Committee on World Trade, Innovations and Technology

MEMORANDUM

Date: January 21, 2010

To: Kirsten Waid, Senate Secretary

From: Senator Lesil McGuire, Chair
Senate Special Committee on World Trade, Technology and
Innovations
Representative Jay Ramras, Chair
House Committee on Economic Development, Trade and Tourism

Re: Hearing Schedule – January 25-29

Committee Schedule

JOINT

Senate Special Committee on World Trade, Technology and Innovations

&

House Committee on Economic Development, Trade and Tourism

For the week of January 25-29

Tuesday, January 26th @ 10:00 a.m. in the House Finance Committee Room

+ PNWER Regional Collaboration on Economic Revitalization

- * First Hearing in First Committee of Referral
- + Teleconferenced
- = Bill was previously Heard/Scheduled

ALASKA STATE LEGISLATURE

Session
State Capitol Building, Room 125
Juneau, Alaska 99801-1182
Phone (907) 465-2995
Fax (907) 465-6592

Interim
716 West Fourth Avenue, Suite 430
Anchorage, Alaska 99501
Phone (907) 269-0250
Fax (907) 269-0249



Chair
Senate Special Committee on Energy
Senate Committee on World Trade,
Technology and Innovations

Co-Chair
Senate Resources Committee

Member
Senate Judiciary Committee

SENATOR LESIL MCGUIRE

PNWER Delegation to Visit Alaska Legislature

(JUNEAU January 25, 2010) – Senator Lesil McGuire (R-Anchorage) today welcomes a delegation from the Pacific Northwest Economic Region (PNWER) to Juneau. Senator McGuire is the president of PNWER, a US-Canadian forum dedicated to encouraging regional global economic competitiveness and preserving our world-class natural environment.

“I am looking forward to discussing topics such as PNWER’s Arctic Caucus and the Alberta Oil Sands with the visiting legislators from around the region,” said Senator McGuire. “This visit will give Alaska lawmakers a great opportunity to share ideas and learn about important issues in the Pacific Northwest, on both sides of the border.”

The PNWER delegation will appear before a joint meeting of the Senate Special Committee on World Trade, Technology and Innovations and the House Committee on Economic Development, Trade and Tourism, tomorrow (Tuesday, January 26th) at 10 AM in the House Finance Committee Room.

“As a result of Alaska’s involvement in the PNWER delegation, the state has deepened relationships with our neighbors in Canada and the Northwest,” Senator McGuire said. “The development of Alaska’s resources and economy depends to a large extent on our relationships with our neighbors.”

The PNWER delegation visiting Juneau this week includes:

- Michael Chisholm, PNWER Vice President and Member of the Legislative Assembly (MLA) in Saskatchewan
- Michael Marz, MLA from Alberta
- State Representative Mike Schaufler from Oregon, PNWER Vice President
- Jennifer Loten, Consul from the Consulate General of Canada in Anchorage
- Michael Padua, Alberta Ministry of International and Intergovernmental Relations
- Matt Morrison, Executive Director, PNWER
- Ian Burkheimer, Program Manager, PNWER

Founded in 1991, PNWER includes public officials from Alaska, Washington, Oregon, Idaho, Montana, British Columbia, Alberta, Saskatchewan, Yukon Territory and the Northwest Territories.

For more information, contact Senator McGuire or Esther Cha at 907-465-2995.

###

PNWER Arctic Issues Caucus

Forum for Northern Territorial and
State governments to exchange ideas
and inform regional priorities

Organization

- Informal
- Members are PNWER Participants for Alaska, Yukon, Northwest Territories and others self-identified as having interest in the north
- Initiated at PNWER Winter meeting in Regina, SK November 2009
- Proposed issues for discussion in PNWER's existing Working Groups

Currently Issues and Working Group

- Energy – Discussion of outer continental shelf oil and gas development
- Transportation – “The Northern Gateway” – Improving the flow of goods, people and services in the north
- Telecom- Match infrastructure with development in North
- Border- Identification of unique challenges and solutions of the Alaska – Canada Border

PNWER Northern Caucus Symposium Proposed

- Date: June 2010
- Location: Anchorage, AK
- Participants: High-level Government leaders from AK, YT, NWT, Nunavut
- Format: Small discussion based forum for exchanging ideas and challenges faced by North America's Arctic Jurisdictions

PNWER Economic Leadership Forum Agenda
November 5-7, 2009
Regina, Saskatchewan

Wednesday, November 4

7:00pm Welcoming Reception (with Legislative Academy Attendees) in the Saskatchewan Room hosted by the University of Regina featuring Dr. Vianne Timmons, University President

9:00pm Hospitality Suites

Thursday, November 5

8:00am – 9:00am Breakfast Keynote featuring US Consul General Laura Lochman in the Regency Ballroom

9:15am – 12:15pm **Technology, Innovation, and Economic Development**
Location: Saskatchewan Room
“The Pacific Northwest as a Giant Science Innovation Park, a ‘Tool Box’ for Growth”

Panel Discussion identifying lessons learned and best practices of economic success even during the economic downturn

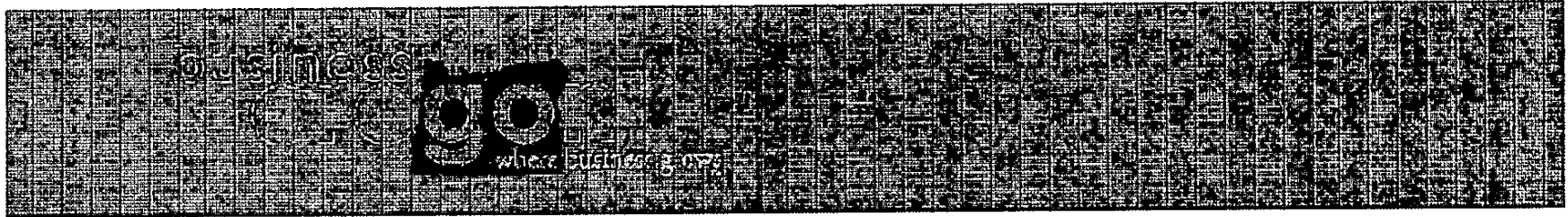
- *Welcome and Introduction- Overview of Innovation Strategies*
- *What structures do we need to catalyze the collaboration in the region? What would it look like?*
- *Portfolio of innovation initiatives – What is going on now? How do we catalogue these, share them, and catalyze more of them?*
- *What platforms allow flexibility to address needs?*
- *Innovation is a distributed activity – there are nodes in a network across the region – but how do we strengthen both nodes and the network?*
- *How do we encourage convergence through collaboration? Can we identify strengths and expertise, and areas of gaps, and work collaboratively to fill those gaps, even outside the region?*

Introductory Remarks:

- Hon. Rob Norris, Minister of Advanced Education, Employment and Labour

Facilitated Virtual Panel featuring:

- Andrew Walls, Director, Ocean Sciences and Energy, BC Innovation Council
- Marian Hammond, Oregon Innovation Council
- Andy Melnyk, Technology Partnering & Productivity, Innovation Saskatchewan
- Susan Gorges, Executive Director, Springboard West



Innovation: Building a Pacific NW Collaborative

Marian Hammond
Global Strategies Manager
Business Oregon

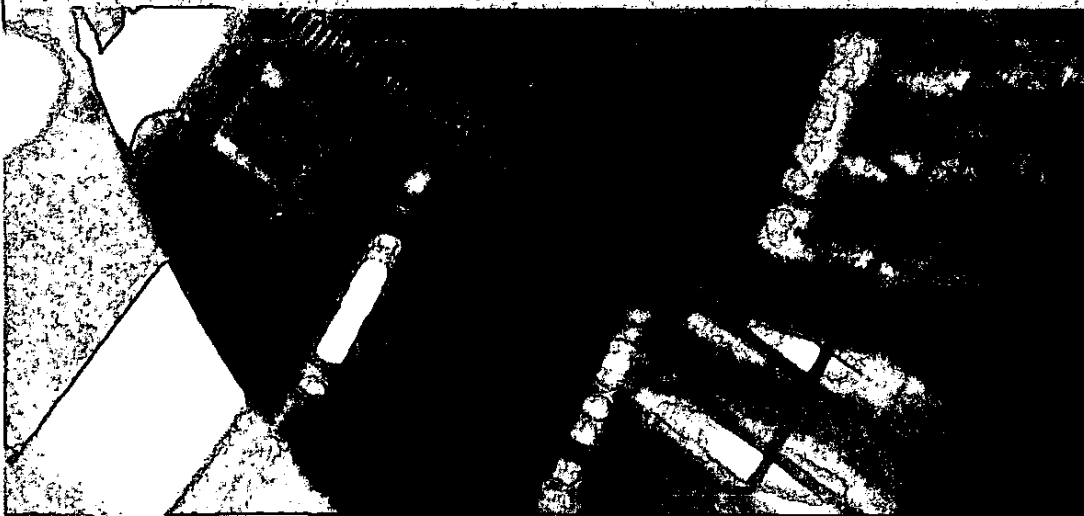
Innovation: Building a Pacific NW Collaborative

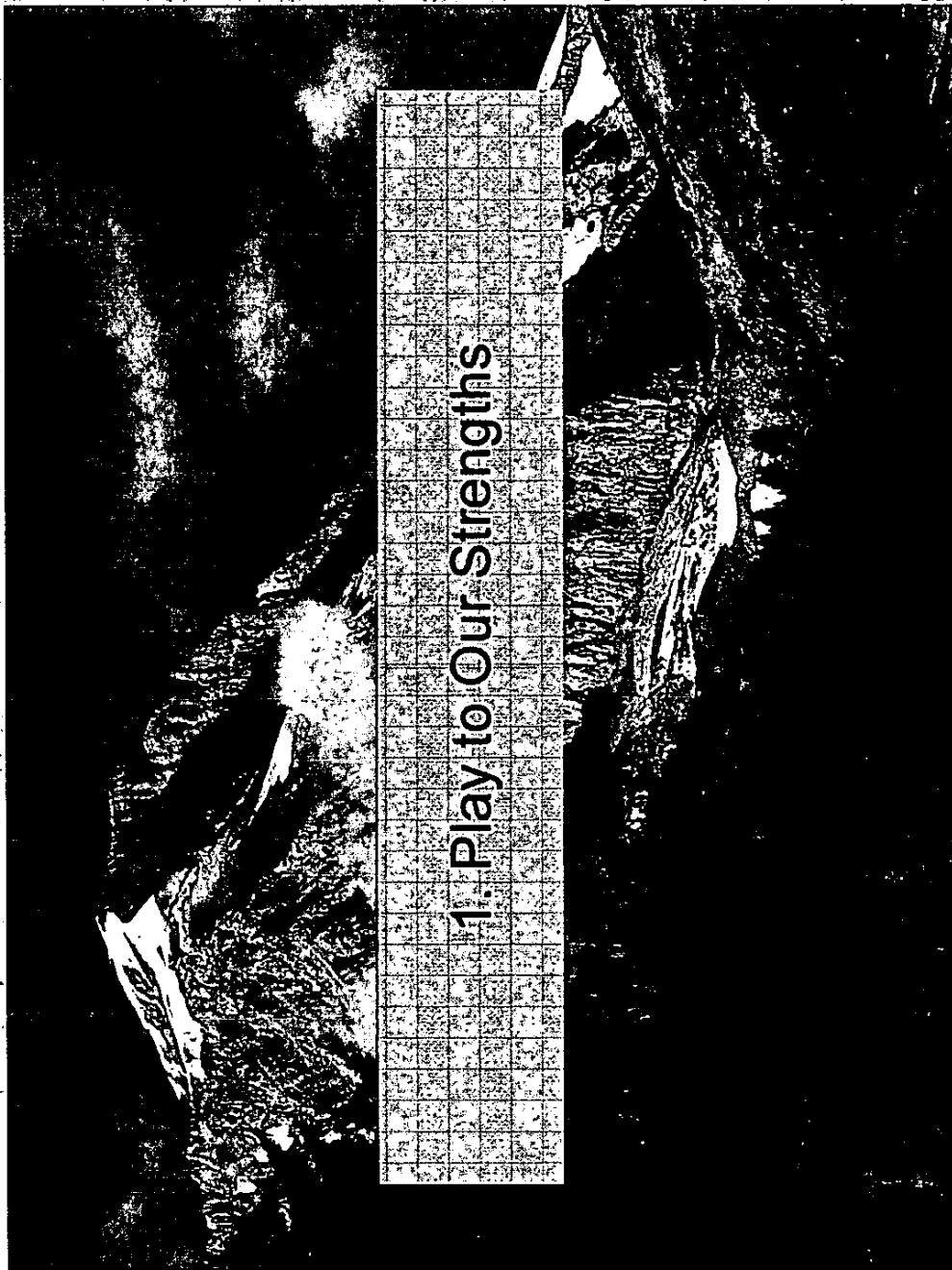
- **Shared Interests**
 - Nanomaterials, distributed renewable energy solutions (wave, solar, wind, tidal/ocean), biomedicine (particularly homeland security-related)
- **Shared Values**
 - Carbon neutrality, collaboration, "Cascadia" approach
- **How do we translate that to shared assets, – and shared benefits?**



Key Lessons from the Oregon Experience

1. Play to our strengths – what do we do first, best, only?
2. Competition and collaboration
3. Clear value proposition – what's in it for me?
4. Stakeholders matter: communicate early and often





The Oregon Strategy – Invest Smarter, not Bigger

Strengths: industry assets/talent
pool, desirability as place to live,
collegial culture

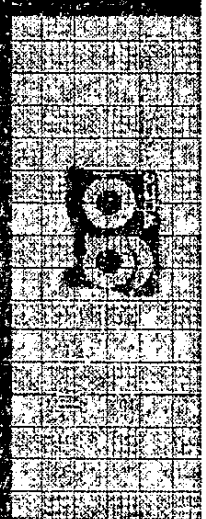
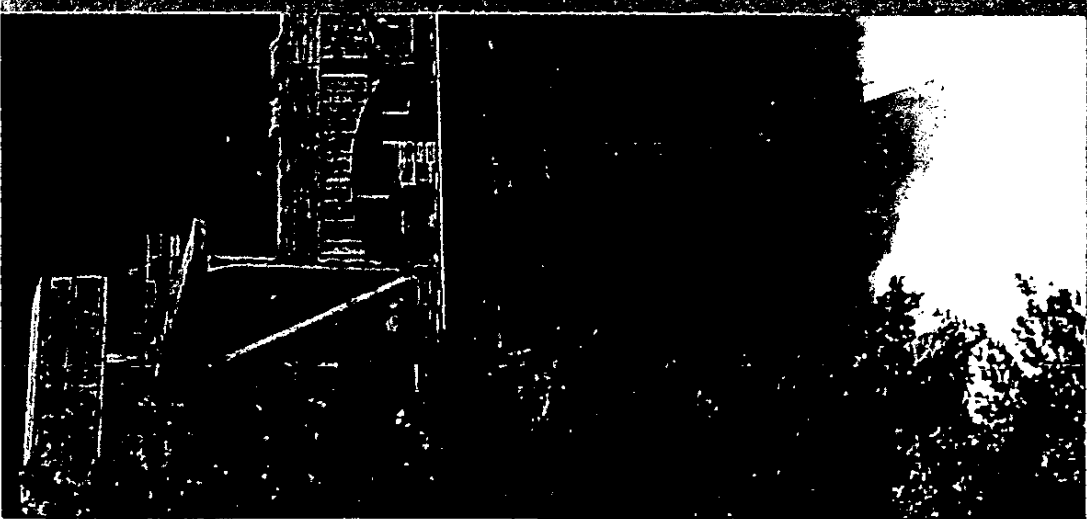
Weaknesses: financial assets,
university sector (no Stanford/MIT,
low funding for university system)

The challenges other states are
investing heavily in higher ed and
TBED; essential to leverage
carefully targeted investments



The Oregon Innovation Council

- Collaboration between private industry, researchers, universities & government to drive the state's innovation strategy and create new companies and jobs
- It gives a small state the chance to compete nationally

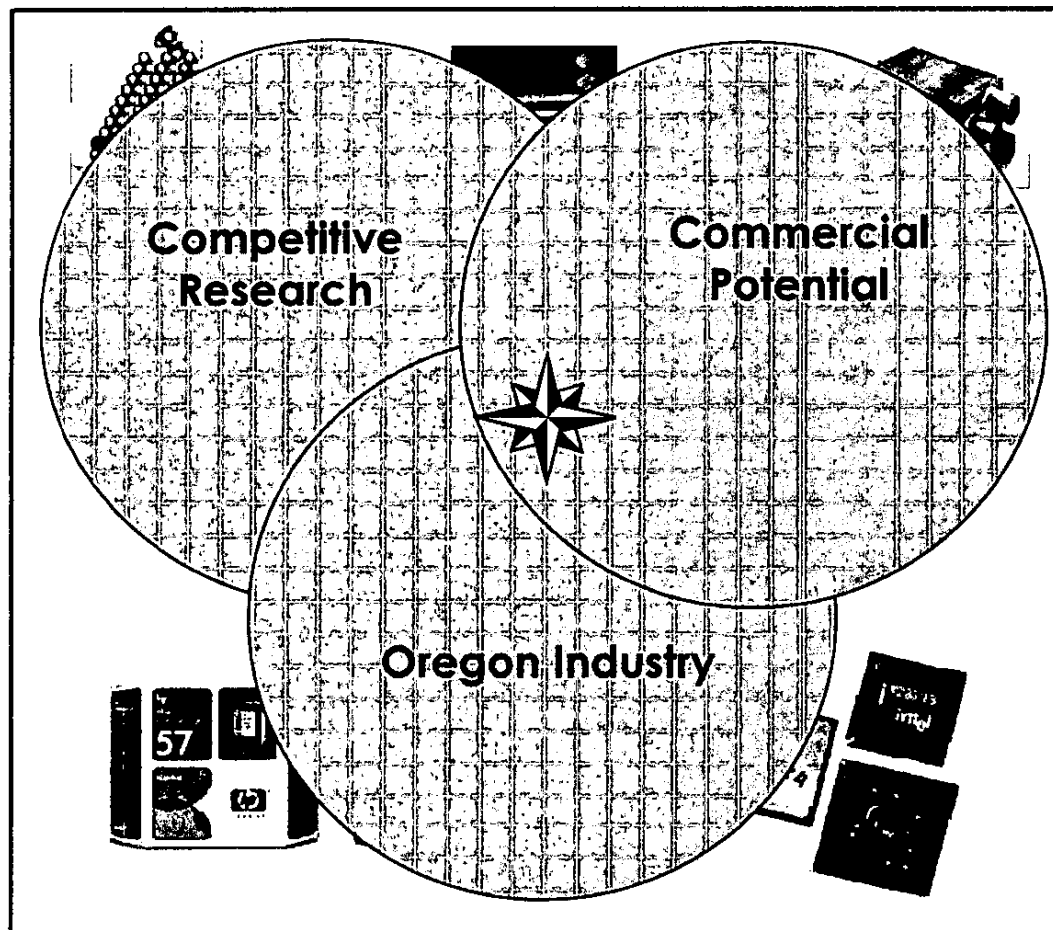




Oregon: Global Leader in Nano/Micro R&D



Signature Research Center Investment Formula



OECD's 2002
study pointed to:
"multiscale
materials and
devices"

=

Nanoscience &
Microtechnologies



Corvallis, Oregon
 www.onami.us
 541-713-1348

Collaborative Research

ONAMI is focusing on four collaborative research thrusts selected for their synergy with Oregon industry, research competitiveness and commercialization potential.

- Microtechnology Based Energy and Chemical Systems
- Safer Nanomaterials and Nanomanufacturing
- Nanolaminates and Transparent Electronics

- Nanoscale Metrology and Nanoelectronics

Northwest Nanonet™

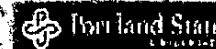
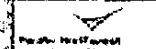
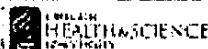
ONAMI's shared user facilities are available to universities, government and industry to advance research and development. Capabilities include state of the art analytical and metrology systems and laboratories for the fabrication and prototyping of micro-systems.

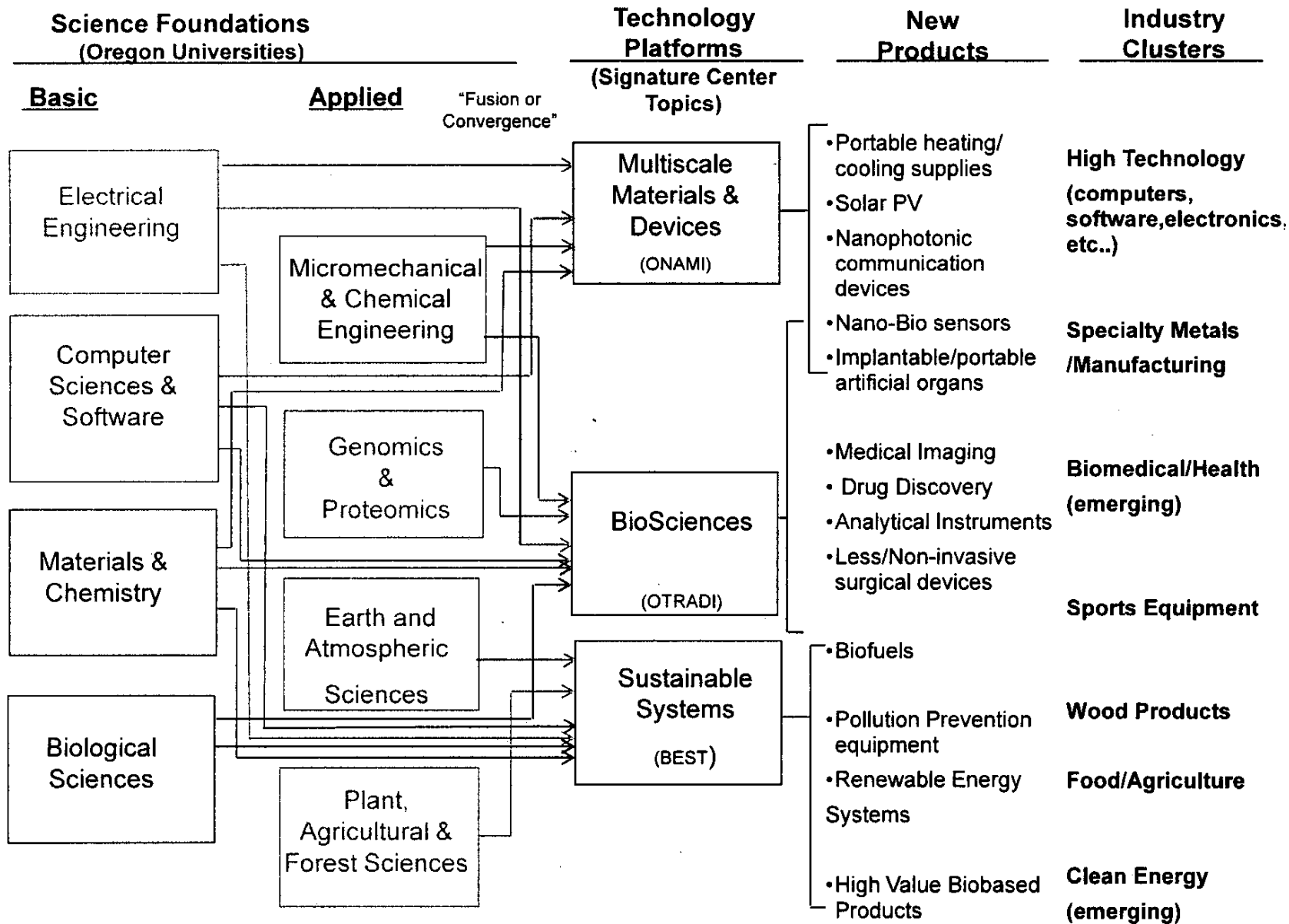
- Materials Characterization
- Prototyping and Fabrication
- Industrial Partnerships

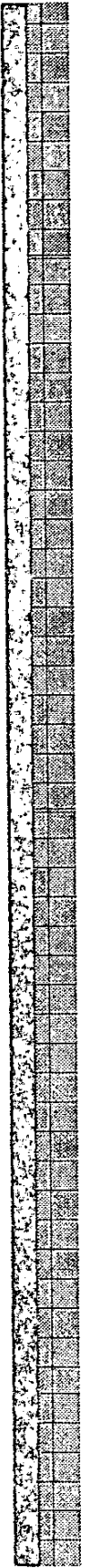
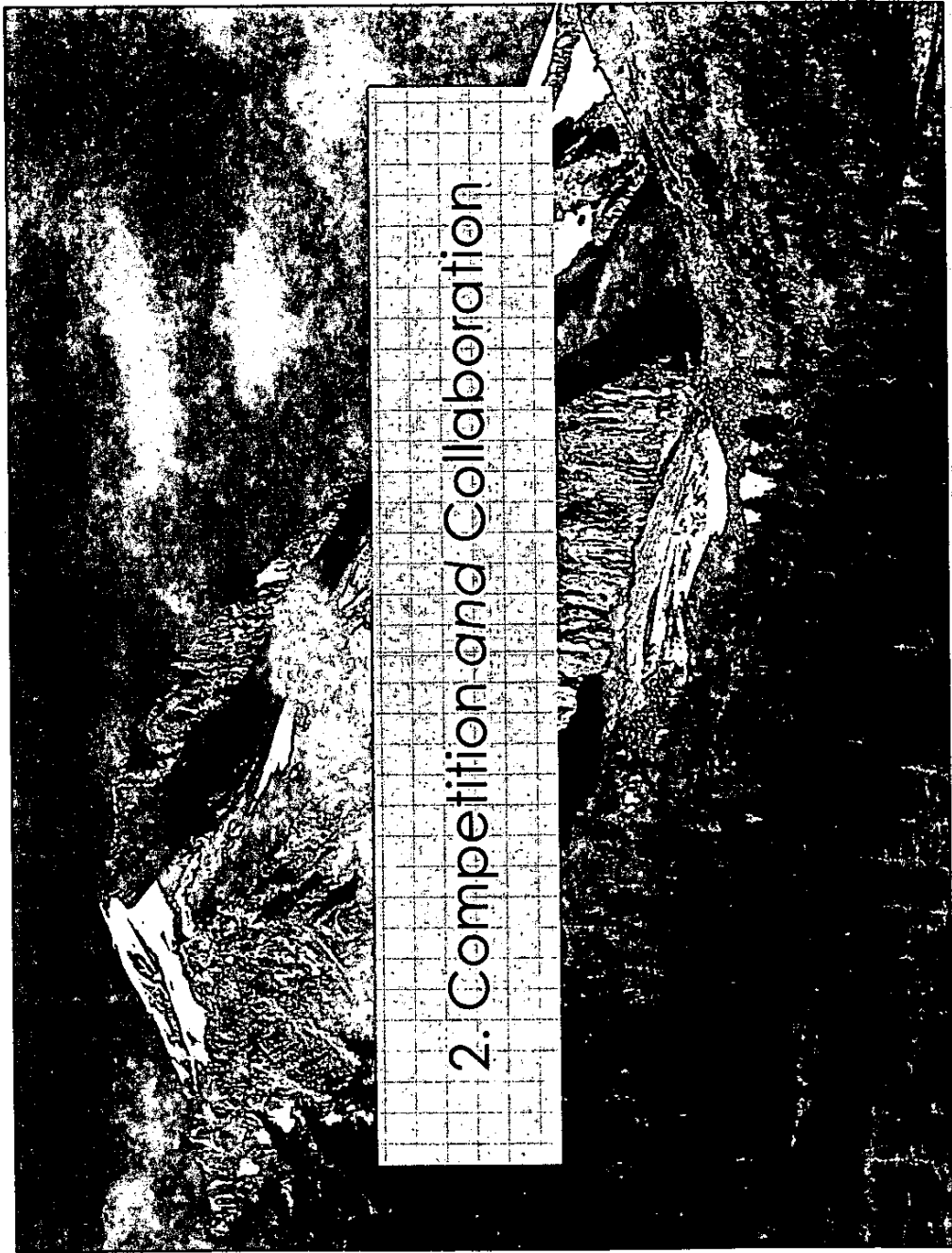
Commercialization

ONAMI's "Cap" programs support Oregon companies to cross the chasm between research and commercialization. Since its inception, our Cap Program has provided \$3M in grants to grow micro- and nano- based businesses in Oregon, and brought nearly \$12M in related investments and grants into our portfolio companies.

- APEX Drive Labs
- CNXLs
- Crystal Clear Technologies
- Dune Sciences
- Design Medic Inc.
- GEM Systems
- HemoDialyzer
- Impria
- MTEk
- Nanobits
- Peregrine Power
- Perpetual Power
- Quantum Fibers

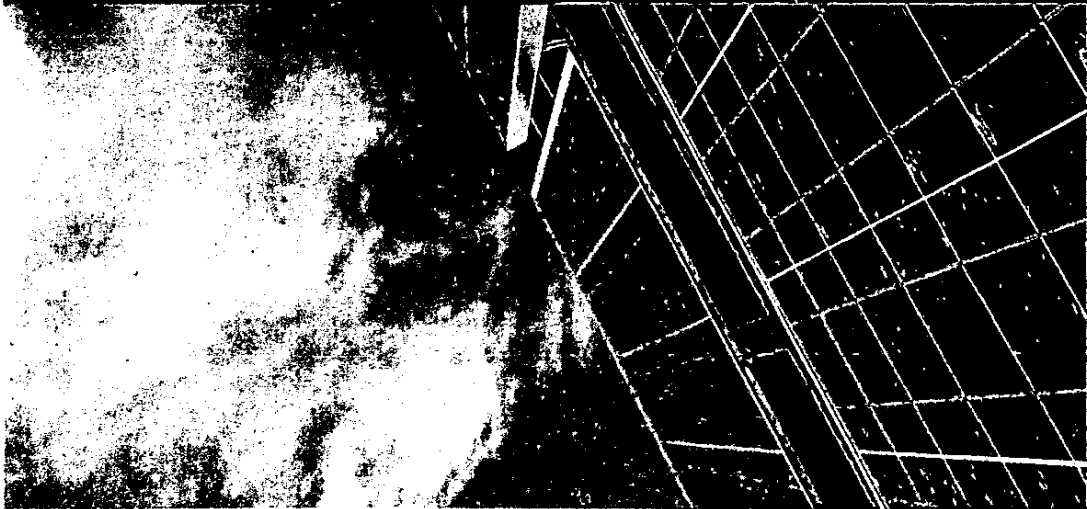


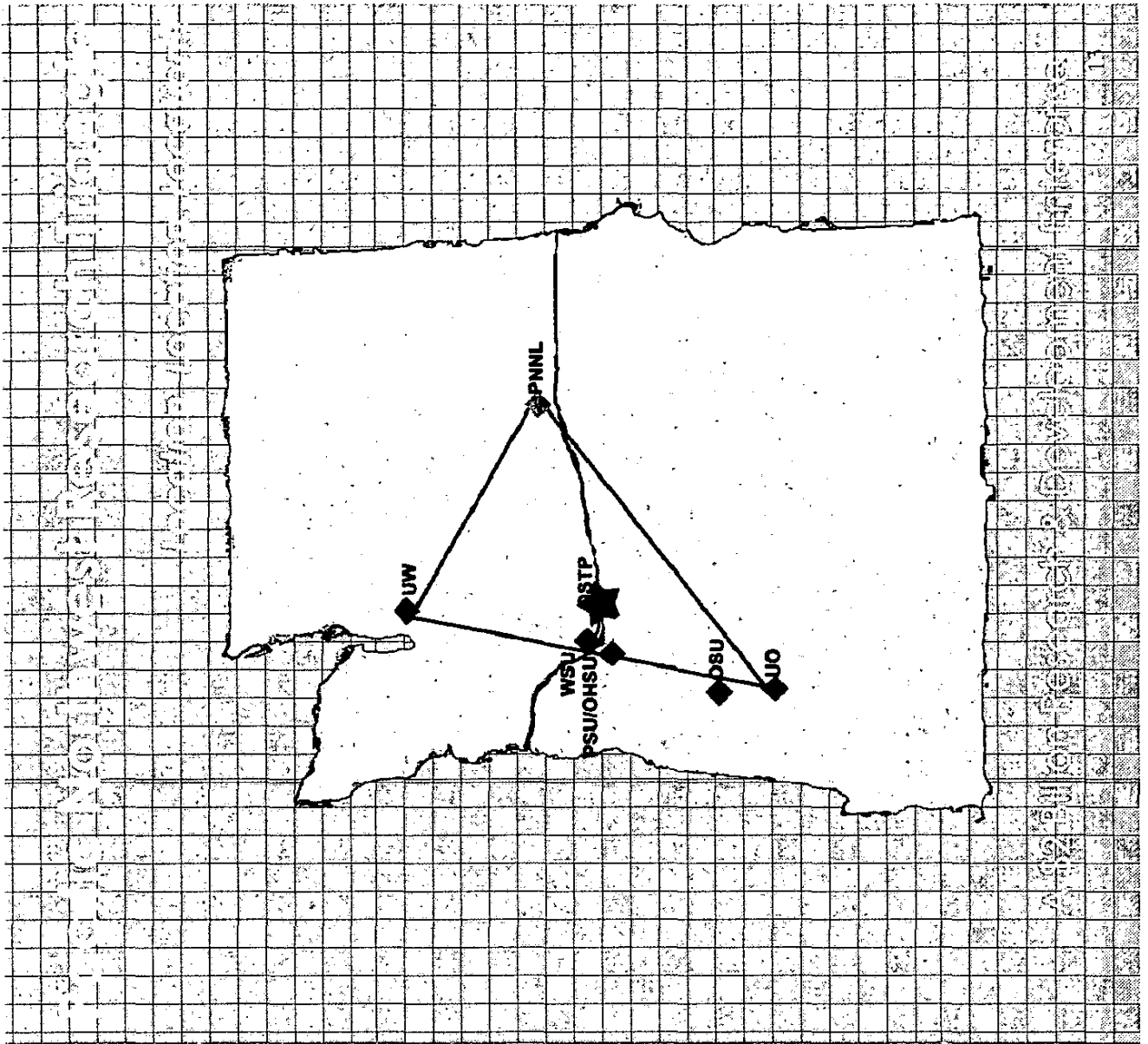


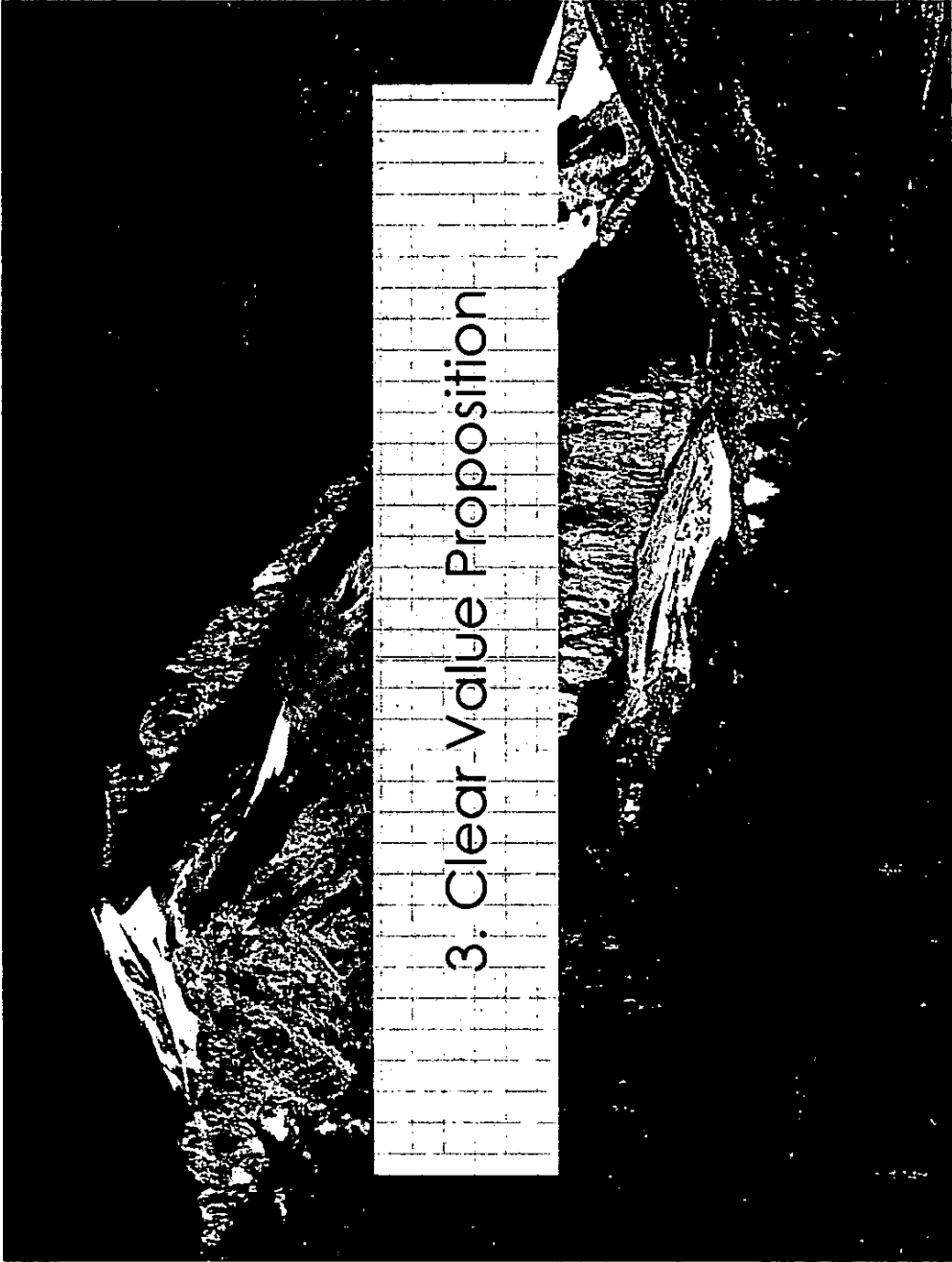


The ONAMI Model

- Interinstitutional research institute that
 - Awards state funds competitively, no prescribed allocations
 - Awards >90% of its state appropriations
 - Rewards collaboration with progressive proposal matches
 - Requires open access to all supported research facilities and instruments
 - Does not own facilities or employ researchers
- Distributed network model with elements of a research park or shared facilities model
- Board of Directors and Commercialization Council consisting of Research VPs and Oregon business leaders (FEL, HP, Intel, Invitrogen, OVP)

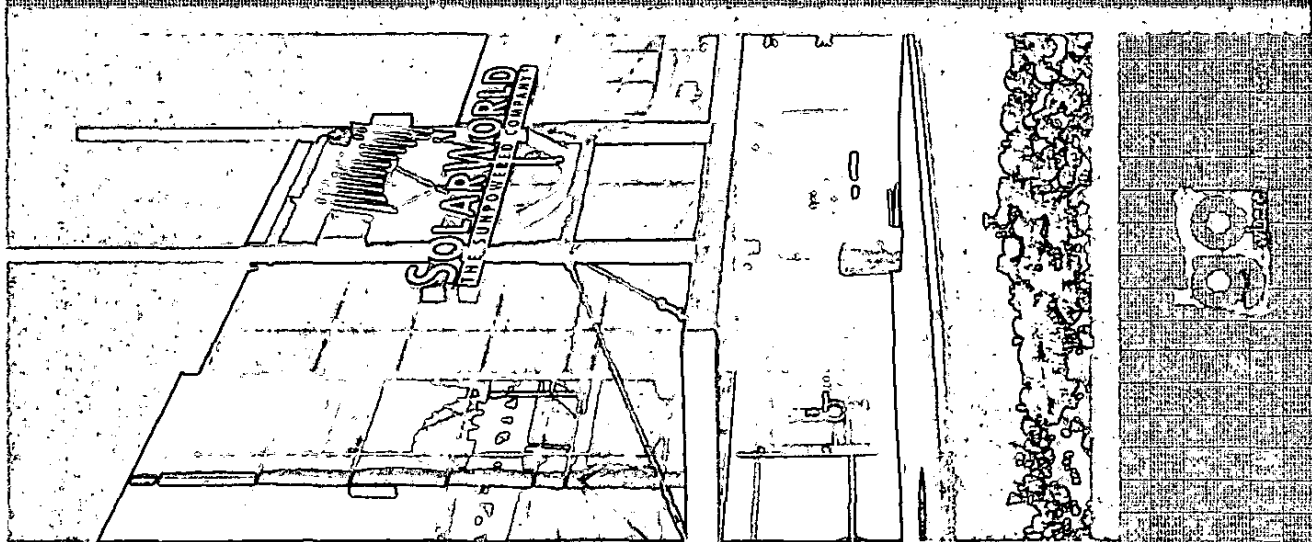






Industry Contributions and Benefits

- Contributions:
 - Industry provided \$30 million to ONAMI in facilities, forgone rent/income, instrumentation & services
- Benefits:
 - Shared facilities are extensions of corporate R&D infrastructure and offer competitive advantage for cheaper than cost of individual ownership
 - Shared facilities make OR a more attractive place for nano/micro R&D - the "cluster" model of competitiveness
 - Commercialization of university technology
 - Improved talent pool of qualified graduate students with more applied research skills
 - Stronger connections and research alliances
 - Higher caliber of researchers, science, and infrastructure



University Contributions and Benefits

- Contributions:

- Universities don't receive overhead payments in SRC grants; contribute time and resources to other universities.
- "Bottom line"

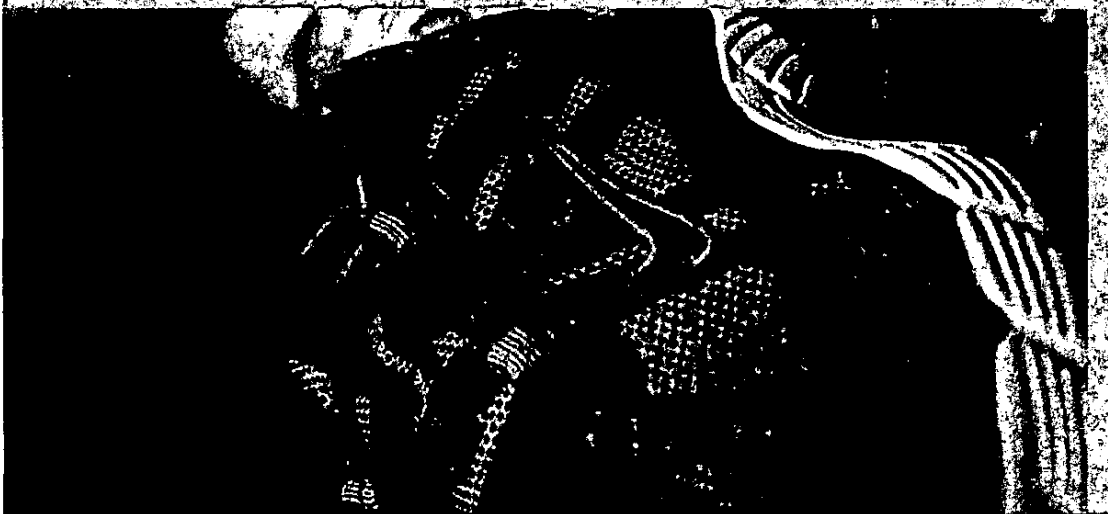
- Benefits:

- Access to broader range of equipment, increased competitiveness and visibility for federal grants



Government Contributions Benefits

- Contributions:
 - Government's role "glue" that ties together industry and university objectives
- Benefits:
 - Receive a recruitment advantage; accelerated economic development returns
 - Clearer outcomes for public investment





4. Communicate Early and Often



ONAMI Progress Toward Milestones

Milestone	2Q08 Status	End Status
Technologies or products partnership with ONAMI affiliates specialized by Oregon companies	10 start-ups + 2 gap cos	6/30/09
Oregon companies assisted by at least \$20M in private capital.	\$0 - one company close to deal	6/30/09
4-6 world-class researchers contributions from ONAMI	4 onboard + 3 searches	6/30/09
\$40M in new federal and by July 2009.	\$25 million through 2Q	6/30/09

OREGON

ECONOMIC & COMMUNITY DEVELOPMENT DEPARTMENT

NEWS RELEASE

October 30, 2008

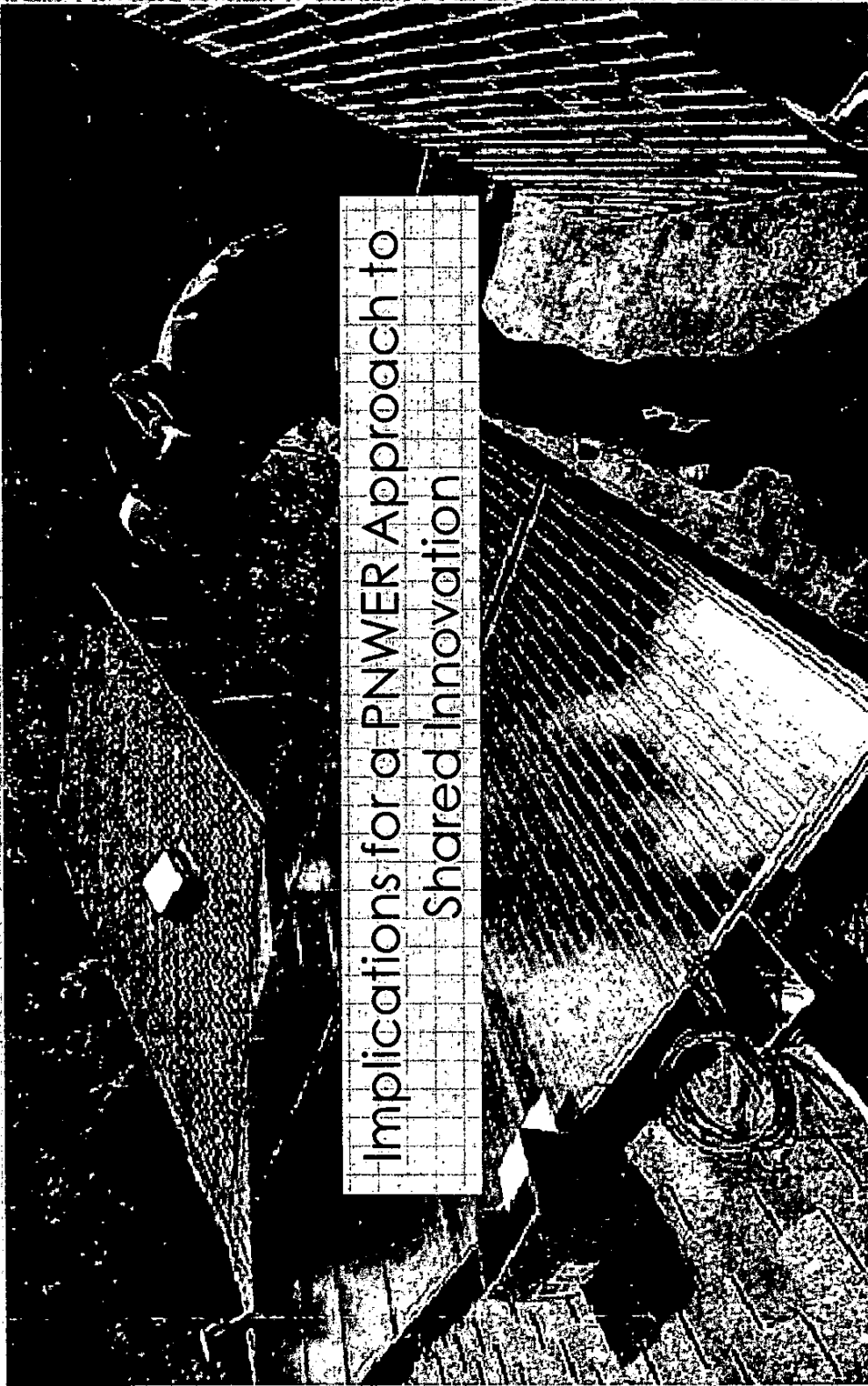
CONTACT:

Skip Rung, ONAMI
541-713-1331
John Doussard, OECD
503-229-5116
Nathan Buehler, OECD
503-986-0050

Analysis shows strong return for Governor's Oregon Innovation Council

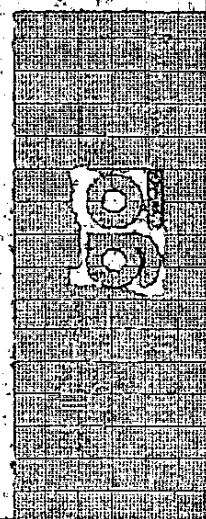
The Oregon Innovation Council (Oregon InC) and the Oregon Economic and Community Development Department receives report on job creation and overall economic impact of investment in signature research center





Implications for a PNWER Approach to
Shared Innovation





1. Start with existing collaborations and strengths

- Inventory shared research interests and assets that are accessible virtually (e.g. ONAMI National)
- What makes this region different? (local education, industry base, etc.)

2. Specific, measurable targets – begin with the eye in mind

- Effort needs to add value for participants

3. Communication is key

- Identify stakeholders
- Develop a simple story to convey a sophisticated strategy

4. Identify motivated champions – the right leadership is critical

- Line of sight to industry – both “backbone” industries as well as high-tech/emerging industries

5. Collaboration and competition model

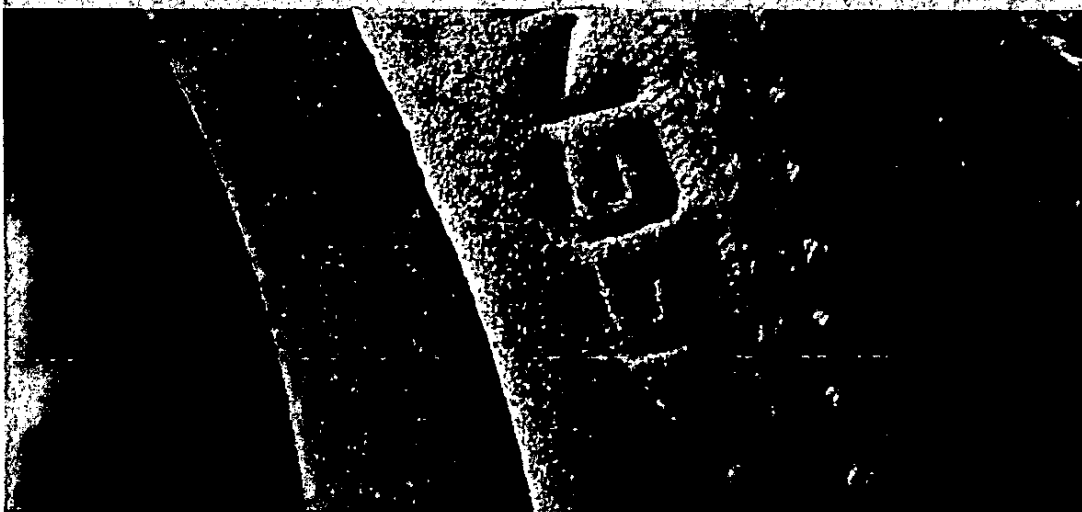
- Participation based on competitive merit
- Not just collaboration, world-class collaboration

Contact Info

Marion Hammond
Global Strategies Manager
Business Oregon

marion.hammond@biz.state.or.us
(503) 229-5226

www.oregon407.com





BC INNOVATION COUNCIL

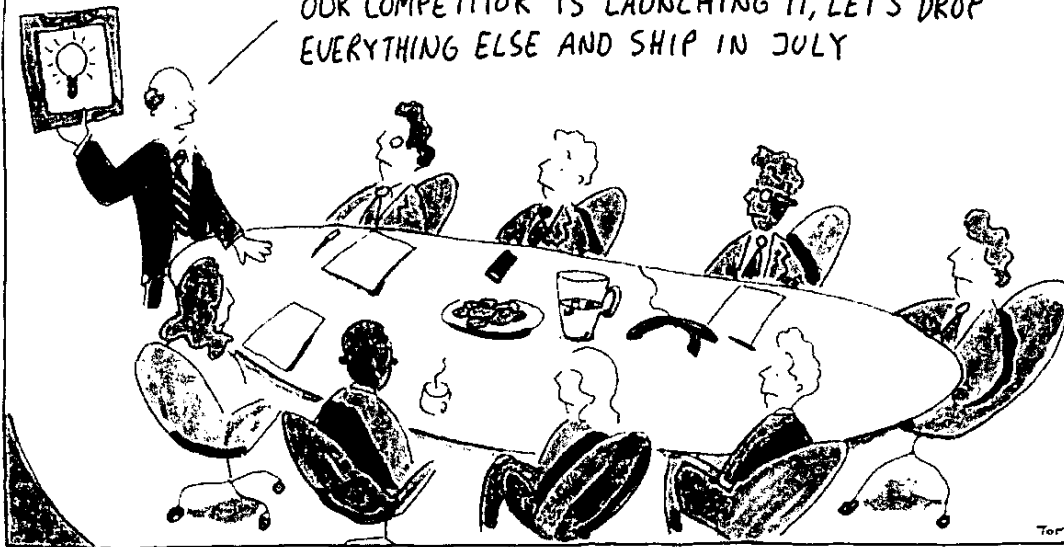
Building a Robust Knowledge Economy in British
Columbia

BRAND CAMP

by Tom Fishburne

MIND TO MARKET IN 3,000 DAYS

WE'VE REPEATEDLY SQUASHED THIS IDEA FOR ALMOST 10 YEARS, BUT NOW THAT OUR COMPETITOR IS LAUNCHING IT, LET'S DROP EVERYTHING ELSE AND SHIP IN JULY



© 3/29/04

SKYDECKCARTOONS.COM

Economic Diversification is a Survival Imperative

BC Innovation Council

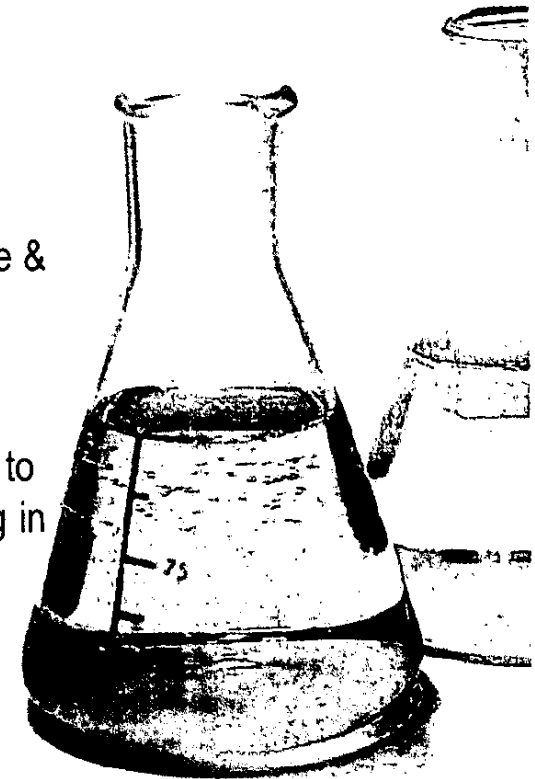
The BC Innovation Council is the Province's lead agency charged with a mandate to facilitate the commercialization of innovation.

Mission: To grow BC's knowledge-based economy through the commercialization of world class innovations from research in science & technology.

Purpose: To make BC's economy more resilient and less subject to the cyclic nature of our core industries through economic diversification; and to make BC's core industries more competitive through innovation, resulting in a better life for all British Columbians.

Focus: The four pillars:

Talent, Innovation, Commercialization, and Awareness



The Innovation Continuum

Talent

To encourage innovators and entrepreneurs in science and technology through BCIC programs and initiatives.



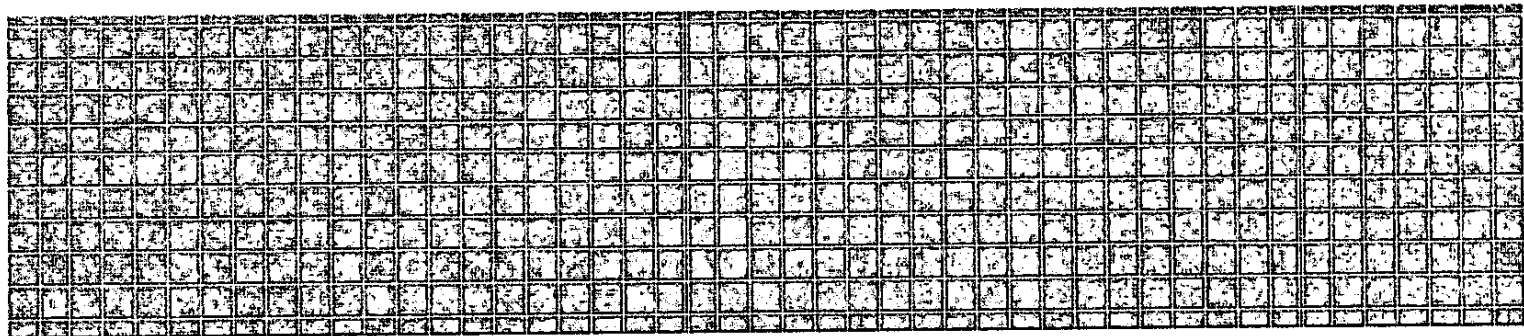
Commercialization

To advance science and technology innovations to commercialization.

The Innovation Continuum

Talent

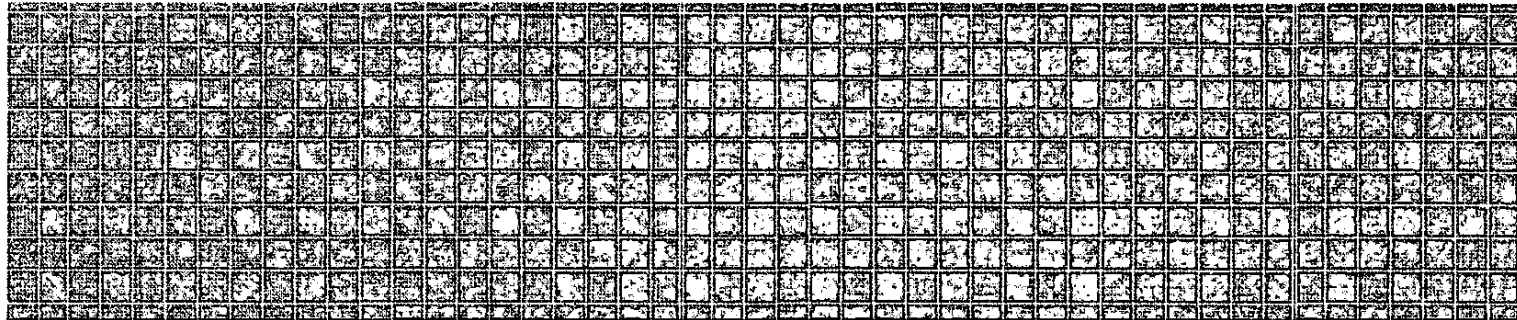
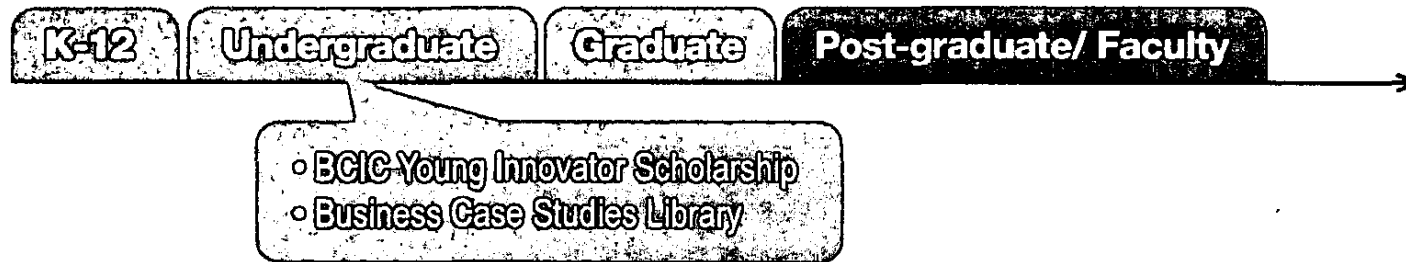
To encourage innovators and entrepreneurs in science and technology through BCIC programs and initiatives.



The Innovation Continuum

Talent

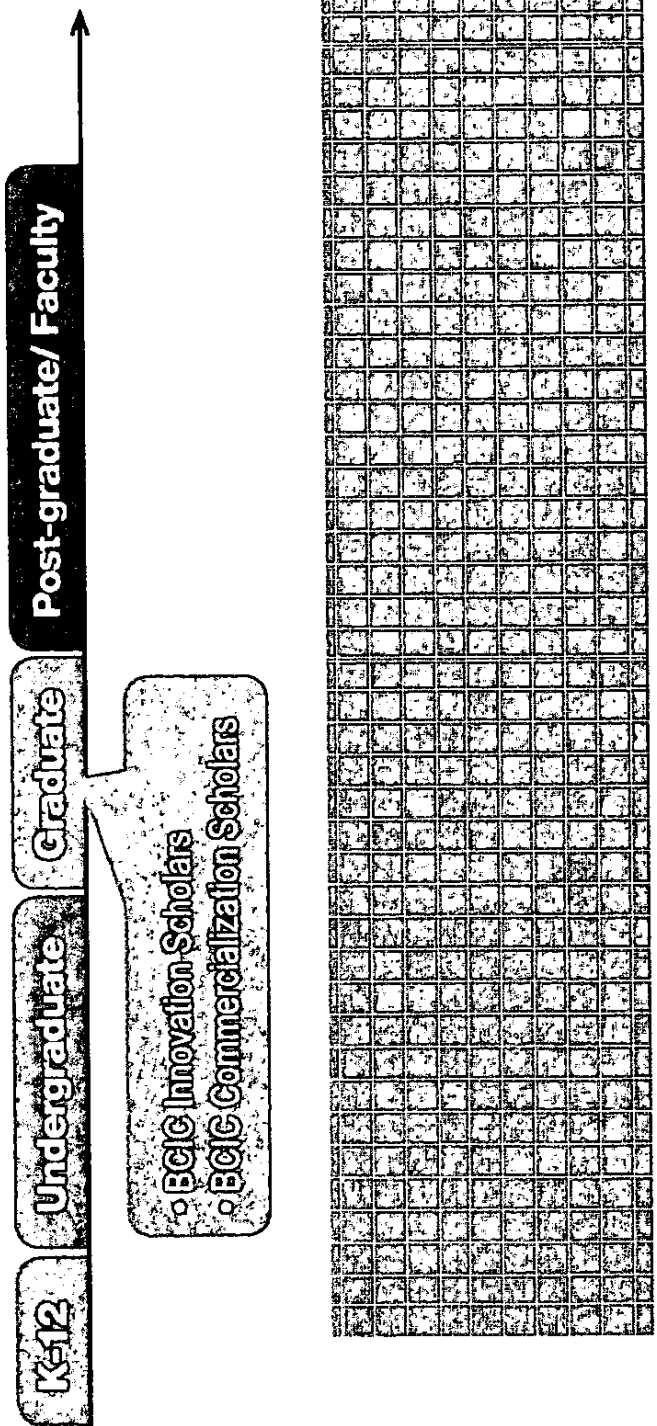
To encourage innovators and entrepreneurs in science and technology through BCIC programs and initiatives.



The Innovation Continuum

Talent

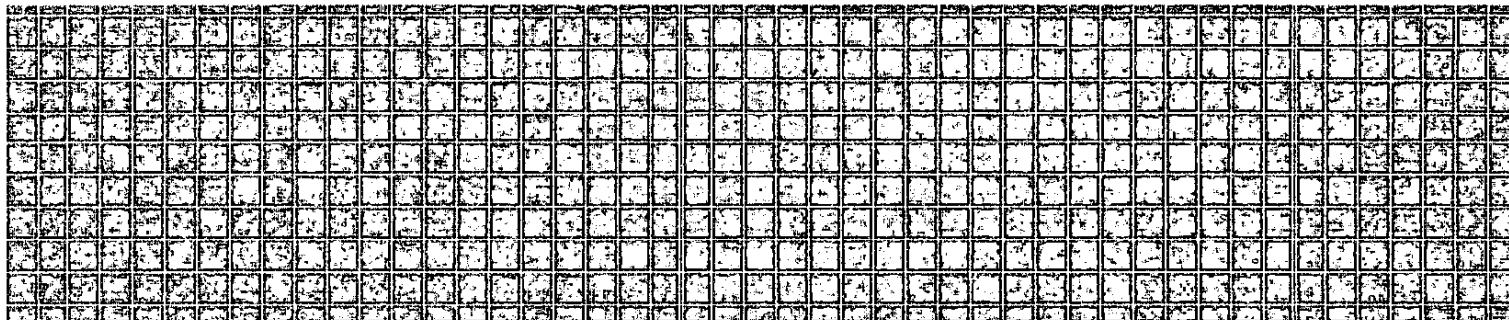
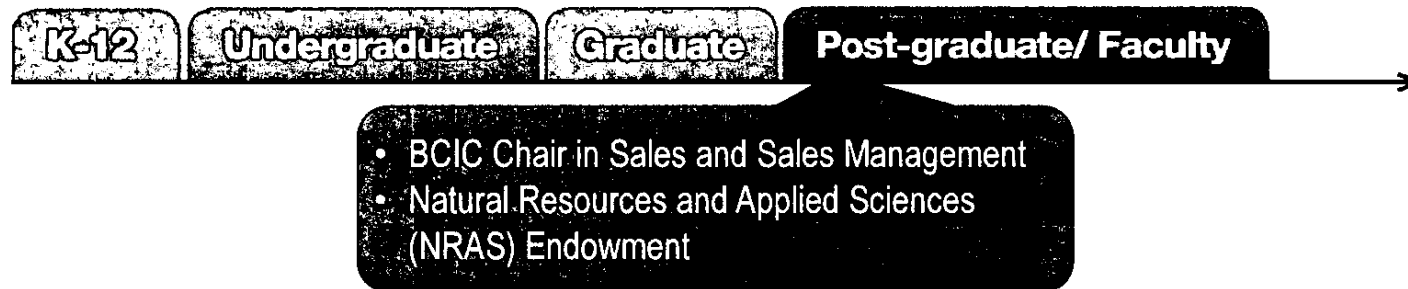
To encourage innovators and entrepreneurs in science and technology through BCIC programs and initiatives.



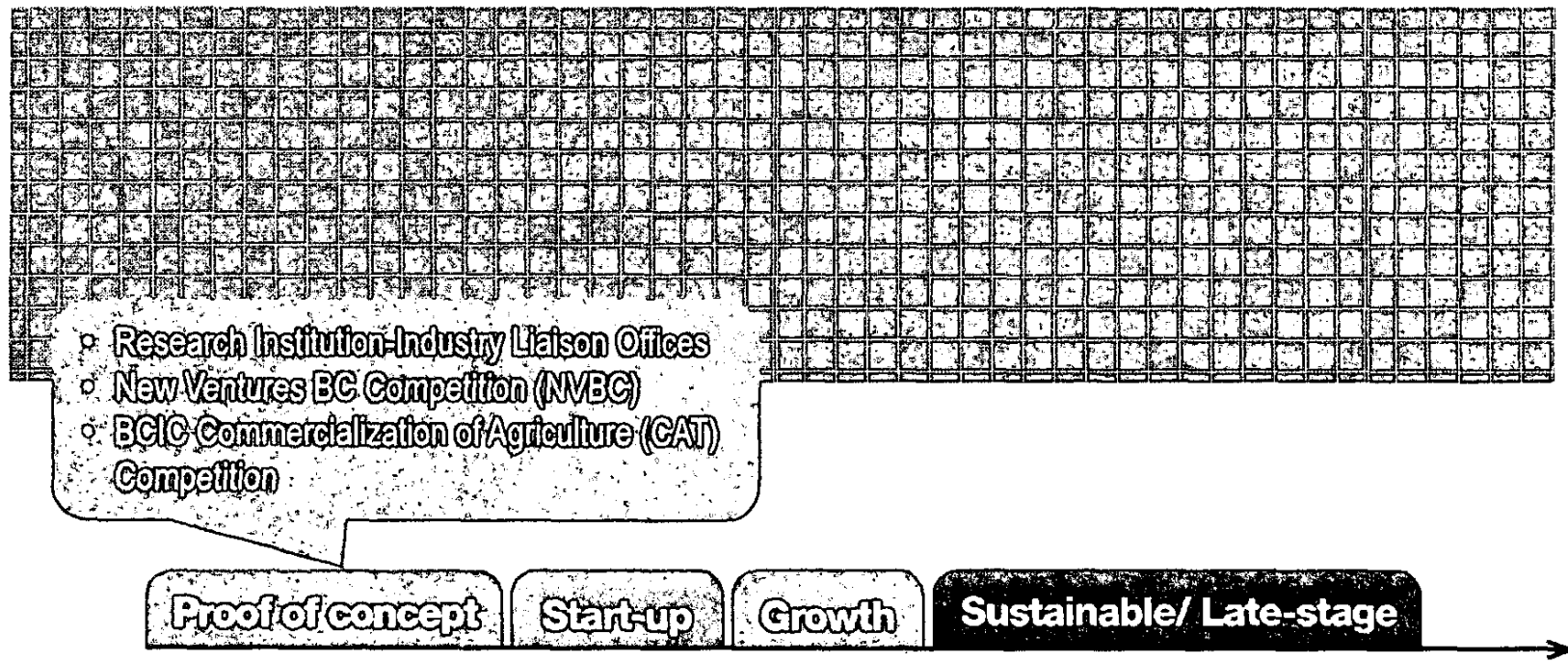
The Innovation Continuum

Talent

To encourage innovators and entrepreneurs in science and technology through BCIC programs and initiatives.



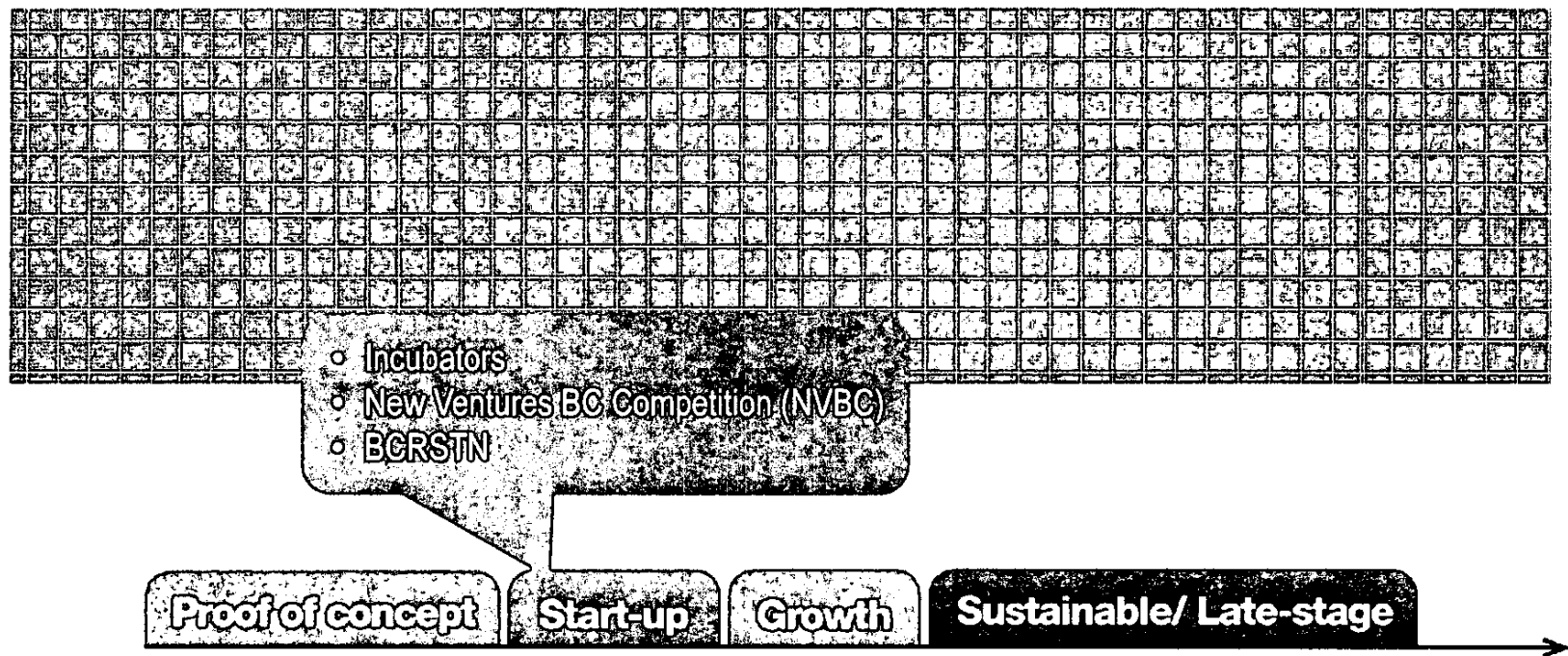
The Innovation Continuum



Commercialization

To advance science and technology innovations to commercialization.

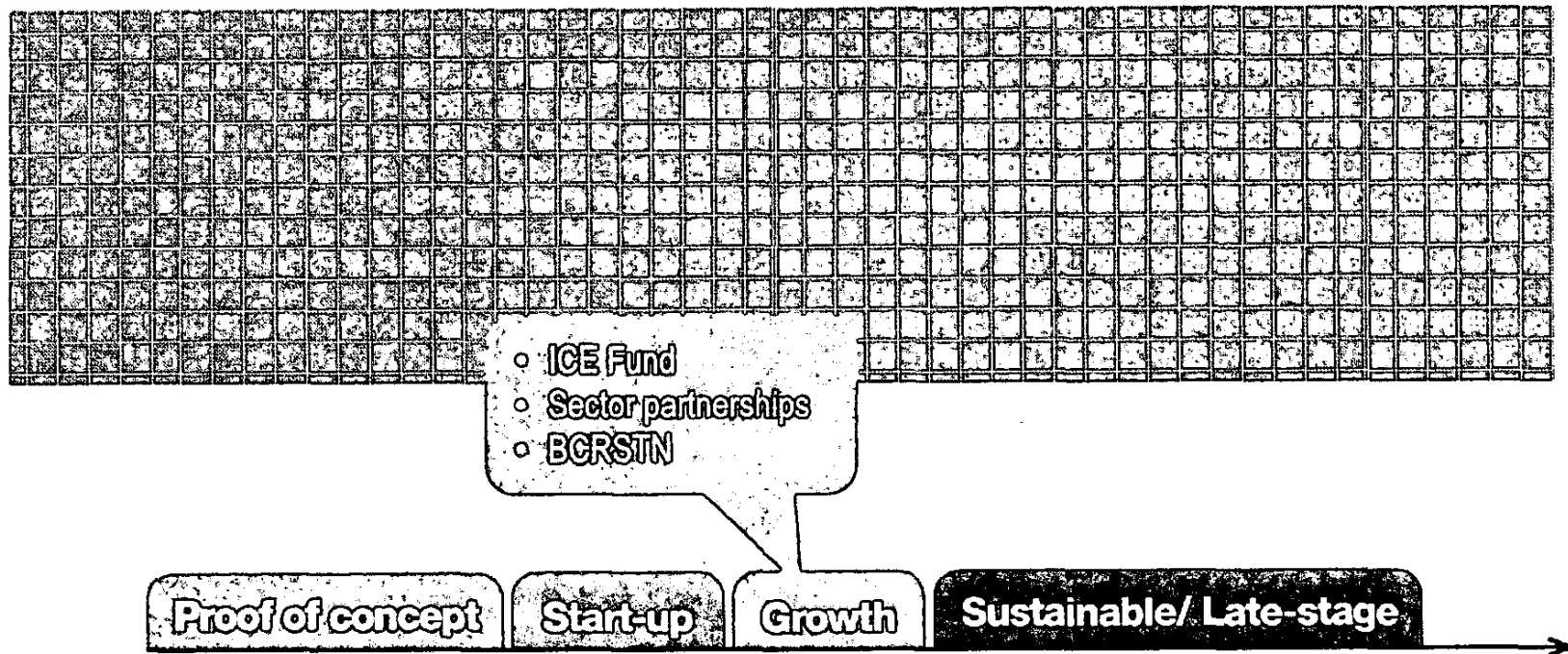
The Innovation Continuum



Commercialization

To advance science and technology innovations to commercialization.

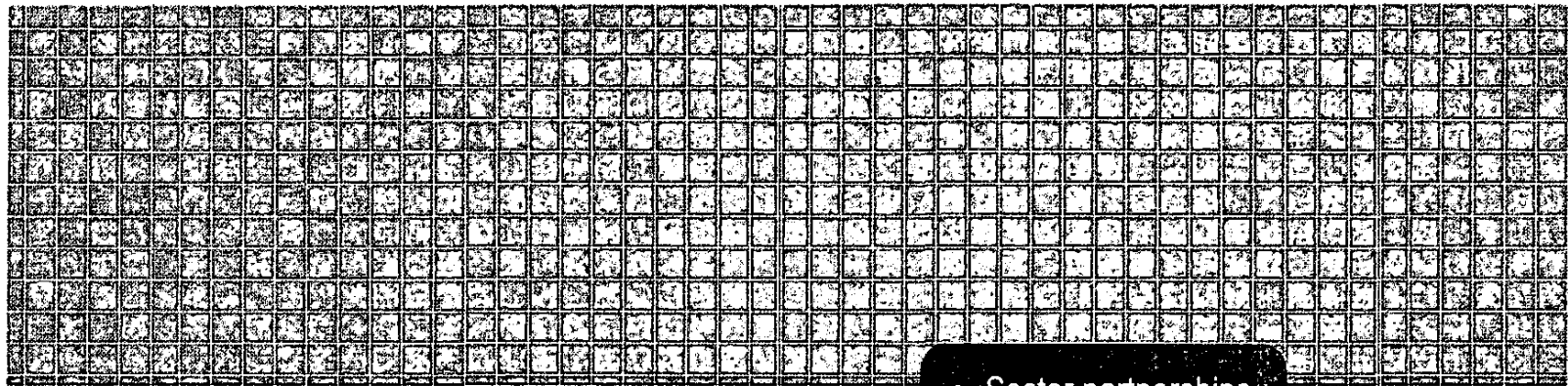
The Innovation Continuum



Commercialization

To advance science and technology innovations to commercialization.

The Innovation Continuum



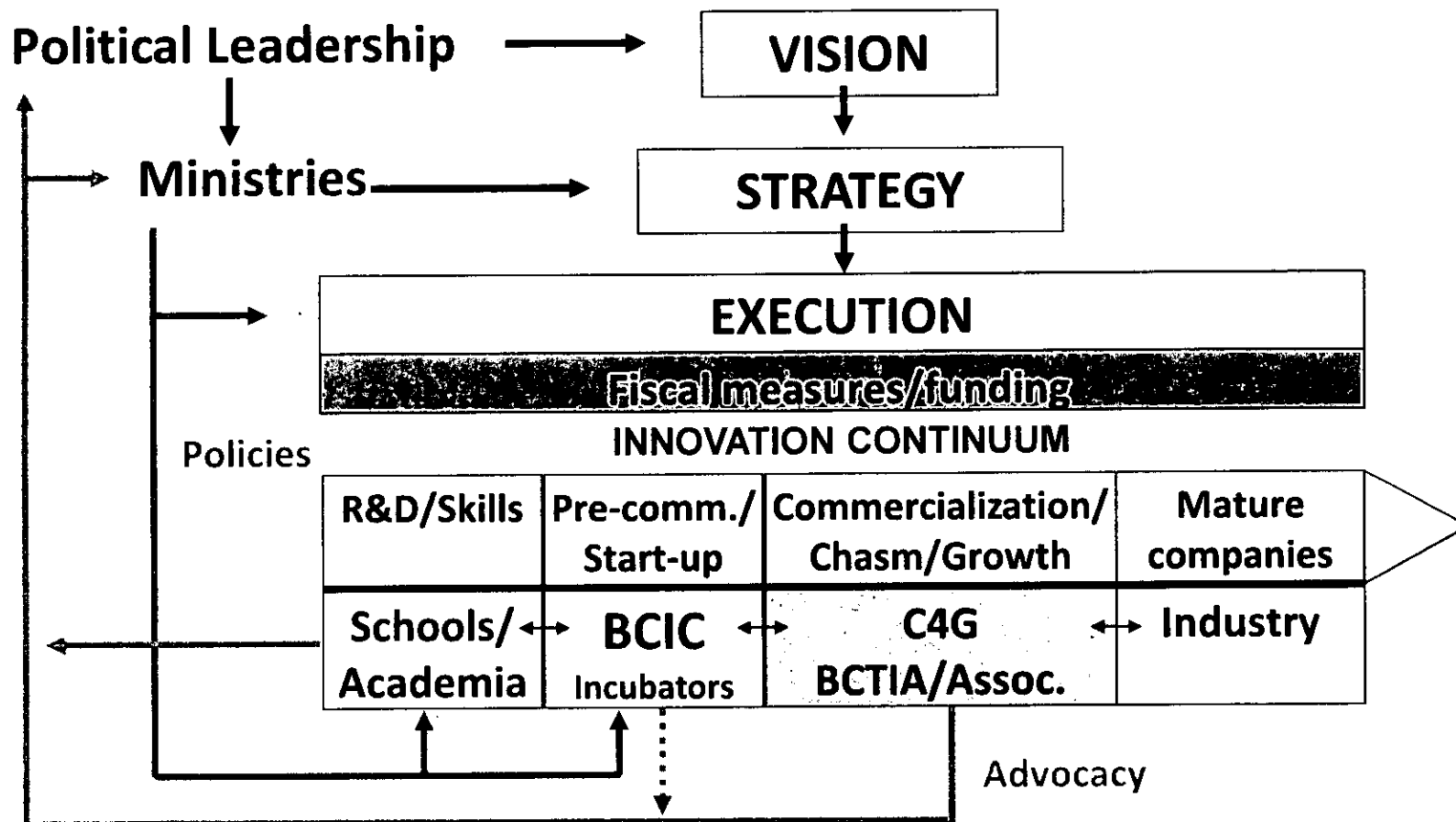
- Sector partnerships
- BCRSTN



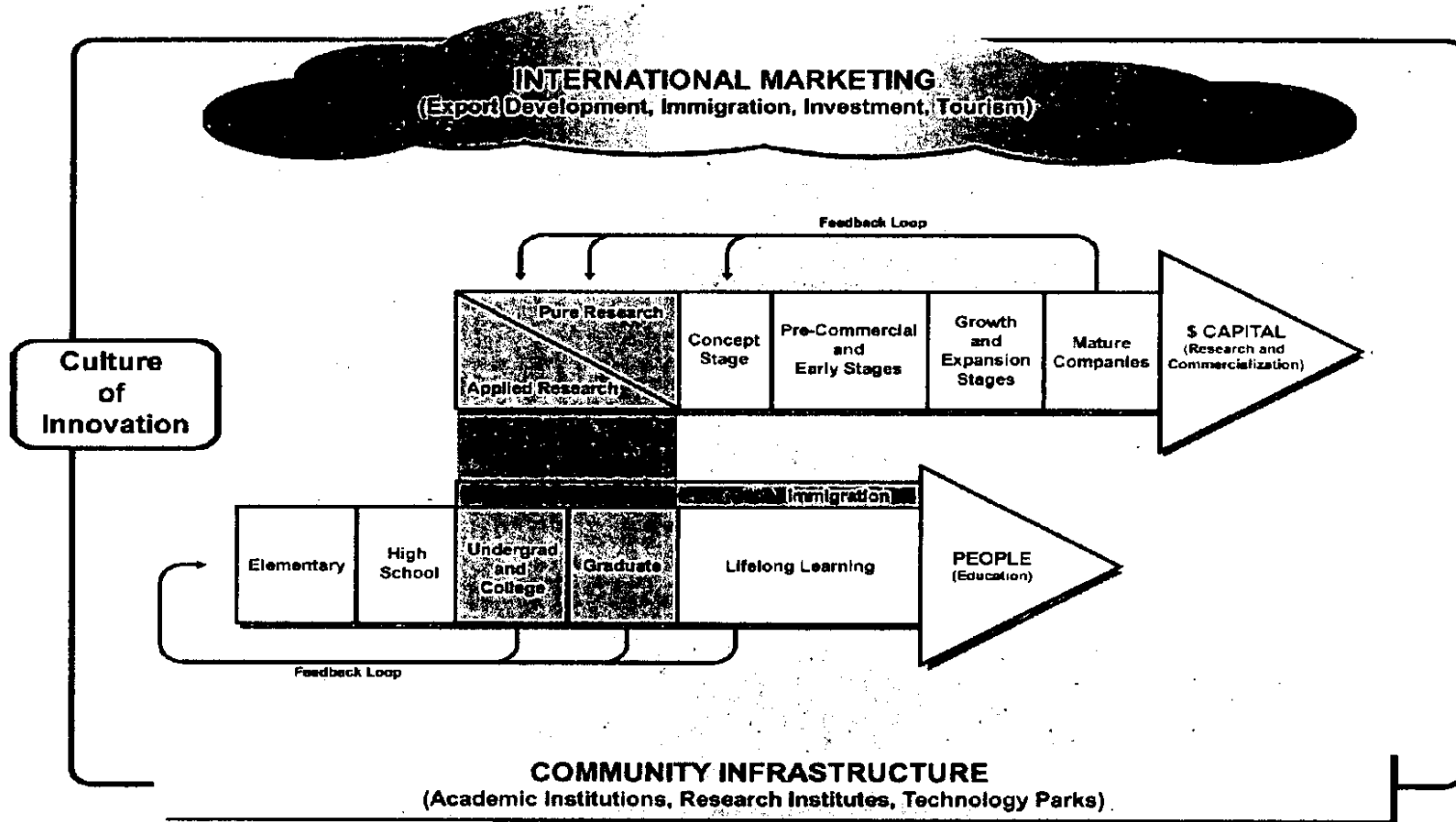
Commercialization

To advance science and technology innovations to commercialization.

Notional Structure



Innovation Ecosystem



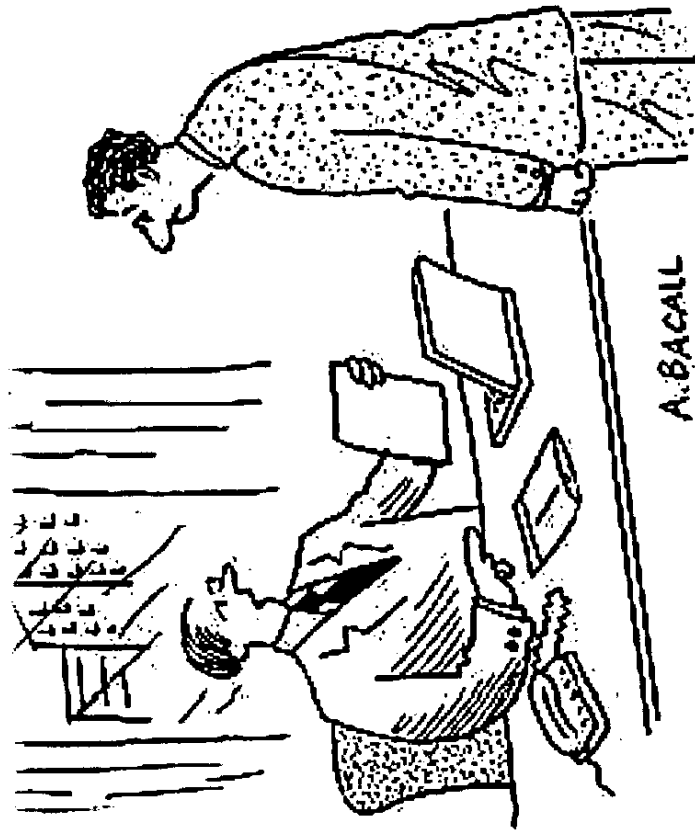
Regional Collaboration- The Status Quo

- Silos within Silos
- Lack of Regional Collaboration Drivers
- Academic/Commercial Disconnect
- Regional Economic Strategic Advantages?
- Development Imperative vs. Political Imperative

PNWER Challenge

Enable Policy Thought

- Identification of Regional Strategic Economic Development Advantages
- Identification of Regional Capabilities and Gaps in Enabling Policies and Programs
- Identification of Research/Commercial collaboration opportunities
- Development of Regional Collaboration Structures



"Your proposal is innovative. Unfortunately, we won't be able to use it because we've never tried something like that before."

PNWER at the 2010 Olympics

A unique partnership for the regional
largest economic development event

A Unique Partnership

- PNWER is a community contributor to the Vancouver Olympic Organizing Committee (VANOC)
- First time in Olympic History that a bi-national organization has been a direct partner with the local organizing committee
- Recognition of the support of PNWER and Alaska from the bid process through to being a positive legacy of the Games

Alaska with PNWER @ The Games

- “PNWER Day” (Feb. 22nd) highlighting the region, particularly AK, WA, ID, OR
 - Tourism Promotion and Athletes Event
 - Border Symposium
 - Business to business and investment reception
 - (Global Business Leaders Forum)
- On the ground personnel working with media to promote stories about AK, PNWER and our other

Tourism Promotion and Athletes Reception

- Time: Feb 22, 12-2PM
- Summary:
 - Global and Regional Media invited
 - Regional Olympic Athletes participate and are recognized by state leaders
 - Brief presentations by tourism offices
 - Mixer activities to encourage development of media contacts

Border Symposium

- Time: Feb 22, 3-5:30PM
- Summary:
 - High level round table dialogue between political leaders on the future of the US Canada border
 - Informing the discussion of Harper, Obama (and Calderon) for upcoming Summit
 - Participants: Cabinet members, Ambassadors, academic leaders, premiers/governors

Business and Investment Reception

- Time: 6-8PM
- Summary:
 - Hosted by NWT and YT at Canada's northern house
 - Featuring Alaska
 - Focused on Oil/Gas, Mining, Transportation, innovation and tourism sectors
 - Invitees are regional business and government leaders

Global Business Leaders Day

- Held morning of Feb 22nd
- Organized by Government of Canada and Financial Times
- PNWER delegates are preferred invitees
- Further information at:
<http://www.ftconferences.com/canada>

Contact and further information

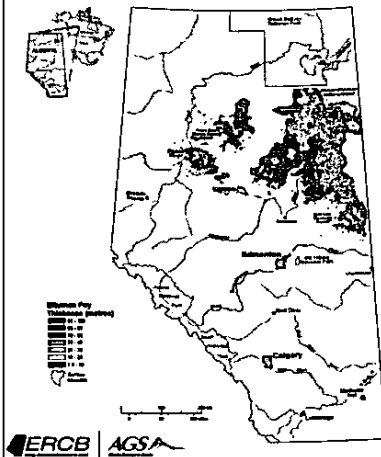
- For updated information go to www.pnwer.org and follow PNWER on twitter: www.twitter.com/PNWER
- Contact:
Ian Burkheimer
ianb@pnwer.org
206-443-7723



Alberta's Oil Sands



Alberta's Oil Sands

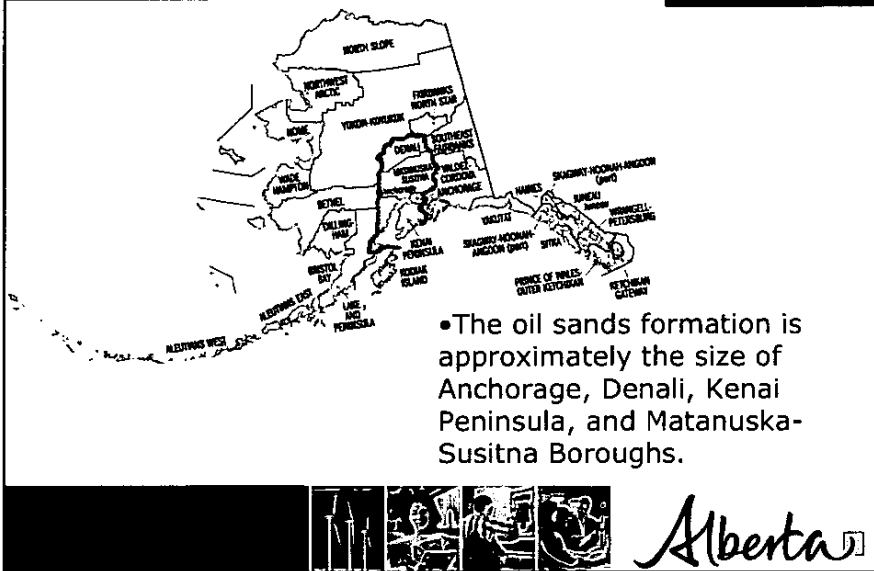


- Located in northern Alberta.
- Oil sands deposits underlie 54,903 square miles; mineable deposits = 1,853 square miles (about 1.25% of Alberta's Boreal forest area).
- Land disturbed to date for mining is about 205 square miles.



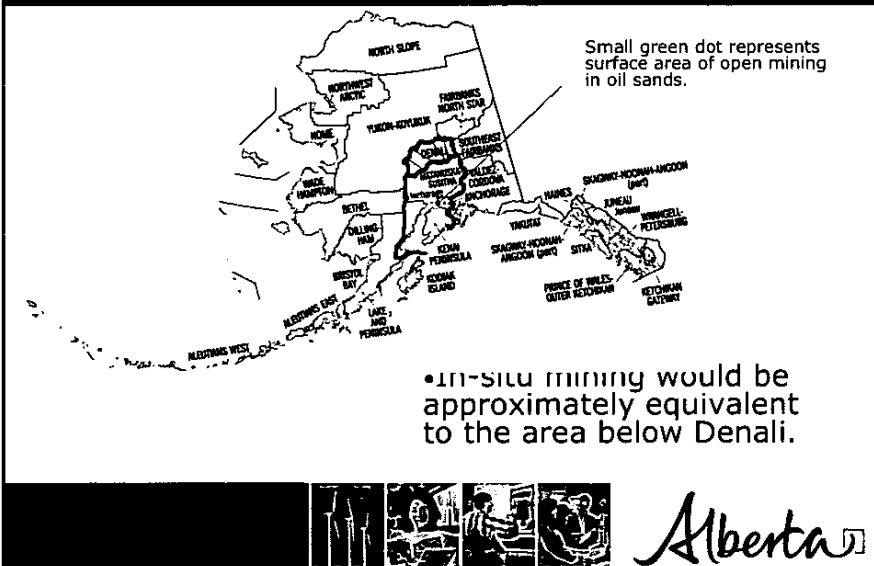
Alberta

Oil Sands – Alaska Comparison



Alberta

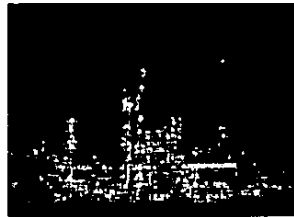
Oil Sands – Alaska Comparison



Alberta

Alberta's Oil Sands

- Naturally occurring mixture of sand, clay, water and bitumen (a very heavy oil)
- Bitumen is separated from sand and upgraded to refinery-ready crude oil



Alberta

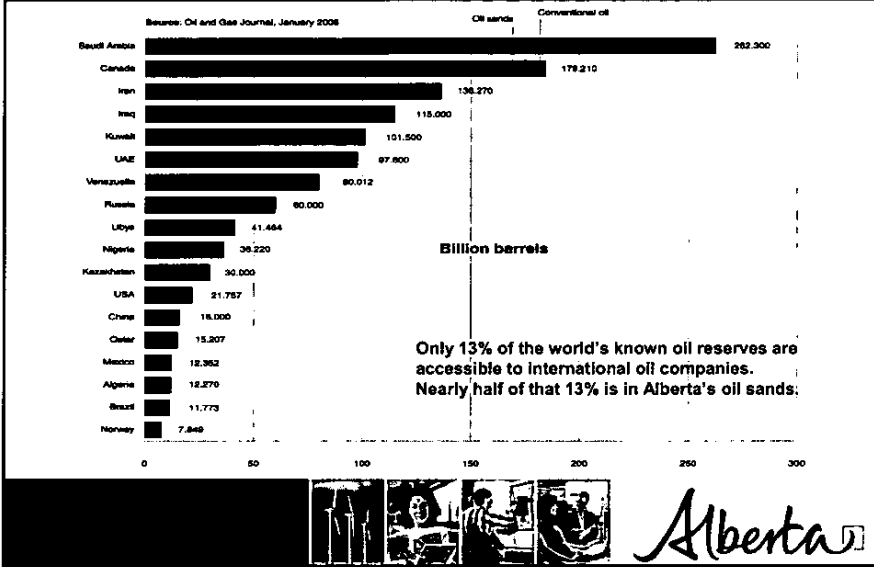
Alberta's Oil Sands

- Project approvals by Alberta and federal government regulators
- Comprehensive regulatory regime for development and operations
- Resource owned by Albertans and developed by private sector

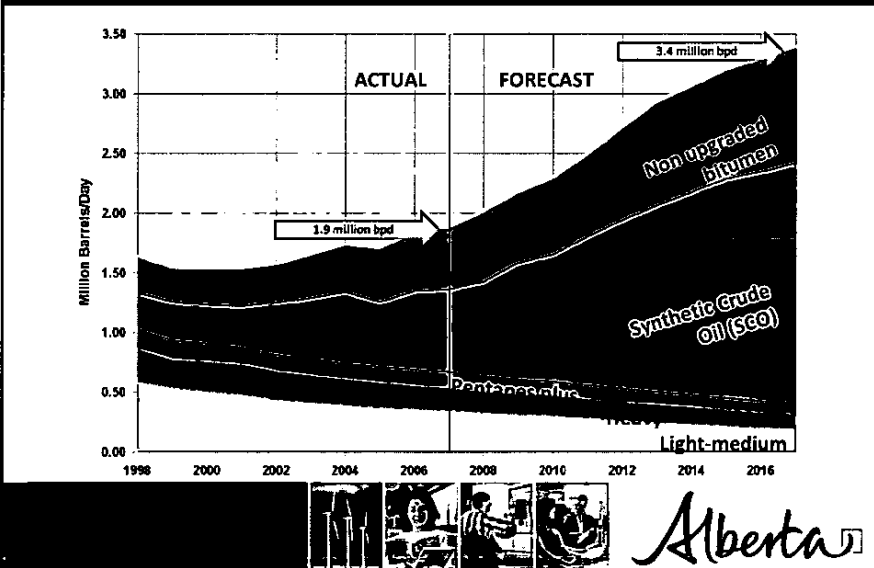


Alberta

World Oil Reserves – Top 18 Comparison



Alberta Crude – Future Production



Economic Impact

- A recent IHS CERA report noted that "...more than C\$150 billion was spent from 2000 to 2008 on oil sands development and related activities ... 20% [of this was spent] in the United States and other countries."
- A July 2009 CERI report indicated the oil sands sector will have an economic impact of \$1.7 trillion on the Canadian economy over the next 25 years.

Source: Cambridge Energy Research Associates (CERA) and Council on Foreign Relations



Alberta

Energy Security

Perhaps the greatest impact of expanded oil sands exploitation would be a diversion of revenues away from adversarial governments...In addition, the United States would benefit from buying oil from a country that would spend more of the proceeds on U.S. goods....

Council on Foreign Relations
"The Canadian Oil Sands: Energy Security vs. Climate Change"
May 2009

Significant growth in oil sands imports into the United States will reduce the required volume of oil imports from elsewhere in the world. The oil sands are sourced from a politically stable and secure country adjacent to the United States.

Cambridge Energy Research Associates
"Growth in the Canadian Oil Sands: Finding the New Balance"
May 2009

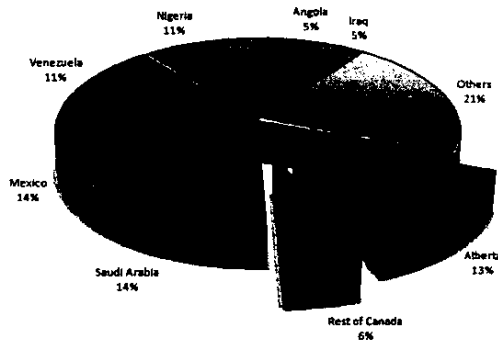


Alberta

US Sources of Crude Oil

2007 U.S. Crude Oil Imports by Place of Origin

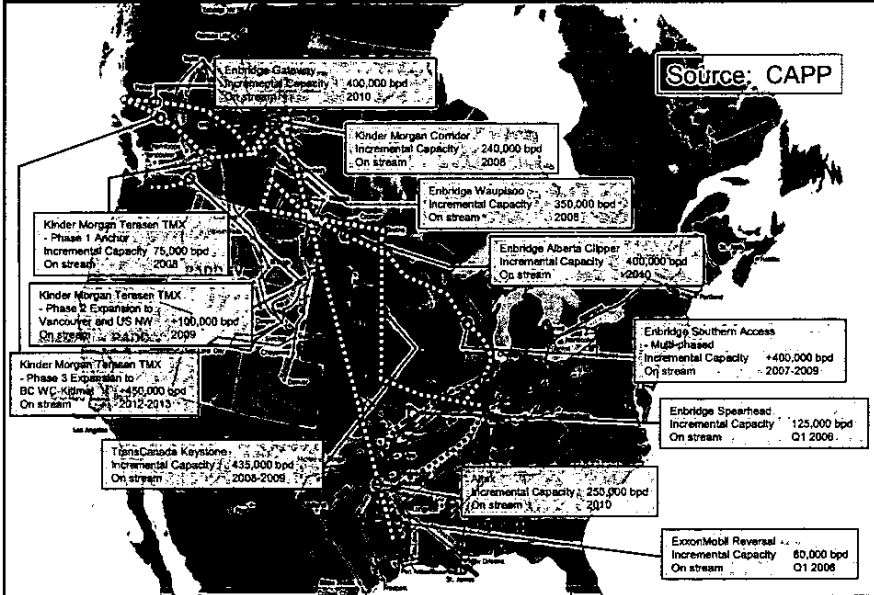
Total Imports = 10.0 million bb/d
Total Demand = 20.7 million bb/d



Source: US Energy Information Administration and the Alberta Energy Resources Conservation Board



Crude Oil Pipeline Proposals



Technology and Innovation are Key

- *The pace of technological innovation in the oil sands has been substantial, and further advances should be expected.*
- *The industry has made major technological strides in optimizing resources, innovating new processes, reducing costs, increasing efficiency, and reducing its environmental impact.*
- *Advances in mining technology and the development of the SAGD technique for in-situ production have reduced costs and GHG emissions.*
- *Several new technologies in various stages of development have the potential to radically change oil sands production.*

CERA, May 2009

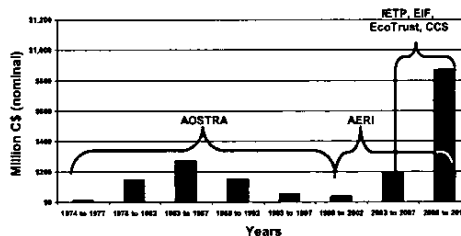


Alberta

Technology and Innovation are Key

- Alberta's oil sands were built on innovation
- Now, more than ever, there is a need for innovative technology to meet the challenges ahead:
 - Efficiency
 - Carbon management
 - Reduced environmental impacts

Alberta R&I Public Investment in Oil Sands & Heavy Oil

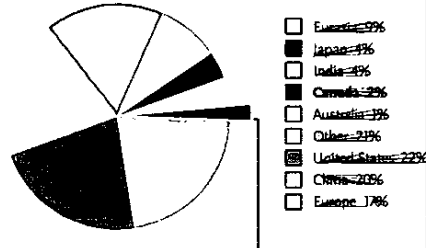


Alberta

Oil Sands and GHGs

The oil sands in a carbon constrained world...

- Oil sands = 5% of Canada's emissions
- Canada = 2% of global emissions
- Oil sands = .1% of global emissions
- GHG emissions per barrel of oil have been reduced by about 1/3 since 1990. Some facilities have achieved reductions as high as 45%.

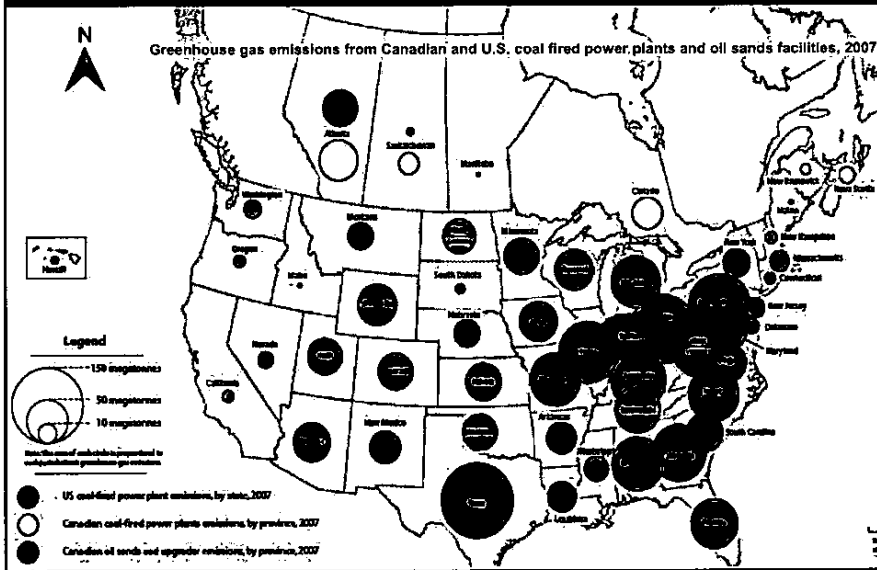


Alberta's oil sands account for less than 1/10 of 1% of GHG emissions

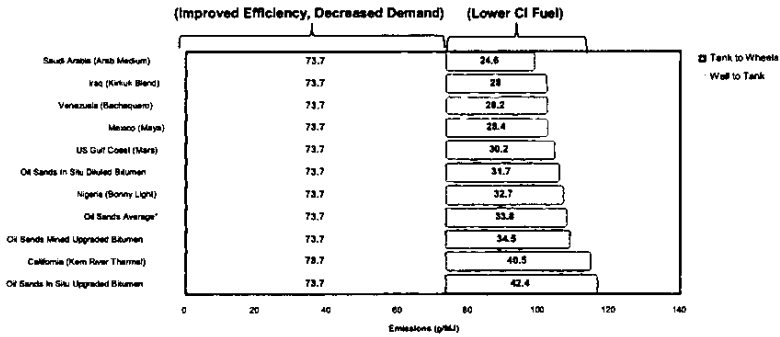


Alberta

Canada and the U.S. -- a shared challenge



Life Cycle GHG Emissions of Crude Oil



Source: Jacobs Consultancy and Life Cycle Associates, Life Cycle Assessment Comparison for North American and Imported Crudes, July 2008

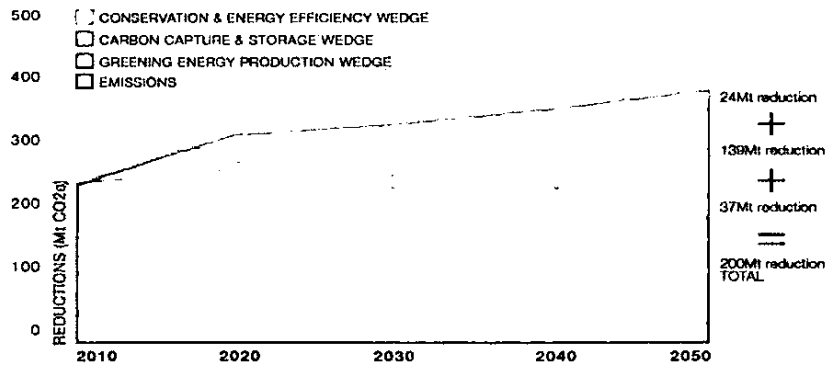
* Based on projected 2008 oil sands production: 55% mined upgraded bitumen, 40% in-situ diluted bitumen, 5% in-situ upgraded bitumen.



Alberta

Confronting Global Issues: Alberta's Climate Change Plan (2008)

GREENHOUSE GAS REDUCTION WEDGE -- HIGHLIGHTING GREENER ENERGY PRODUCTION REDUCTIONS



Alberta

Climate Change Law

Emissions Management Act Specified Gas Emitters Regulation

- First in North America; one of a kind globally
- Applies to all facilities in Alberta that release over 100,000 tonnes of CO₂
 - Facilities have been reporting since 2003
 - About 100 facilities; account for 50% of Alberta's CO₂ emissions

2008 Results:

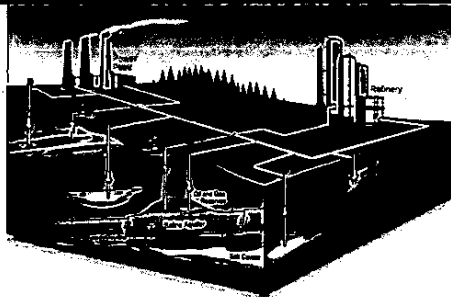
- 6.5 million tonnes of actual reductions
- \$82.3 million into the Climate Change and Emissions Management Fund (combined with 2007 = \$122 million)



Alberta

Carbon Capture and Storage

- Critical element of Alberta's Climate Change Strategy
- \$2 billion for large-scale CCS projects—the largest single capitalized funding investment by any jurisdiction in the world
- Public funding to accelerate the development of projects and encourage investment from industry to make large-scale CCS projects viable
- Alberta's geology ideal for CCS and enhanced oil recovery



Alberta

CCS Commercial Scale Projects

- **Quest Project** (Shell Canada Energy/Chevron Canada Ltd./Marathon Oil Sands LP)
 - fully integrated carbon capture and storage project at the Scotford oil sands Upgrader in the Alberta Industrial Heartland.
 - \$120m (Federal) + **\$745m (Alberta)** = \$865 million committed
 - 1.2 million tonnes of CO₂ captured and stored each year
- **Pioneer Project** (TransAlta)
 - fully integrated carbon capture and storage project at the 450MW Keephills 3 coal fired power plant.
 - \$343 m (Federal) + **\$436m (Alberta)** = \$779 million committed
 - 1 million tonnes of CO₂ captured and stored each year



Alberta

CCS Commercial Scale Projects (cont.)

- **Swan Hills Project** (Swan Hills Synfuels)
 - Convert coal into synthetic gas for low-emissions electricity and capture CO₂ for use in enhanced oil recovery
 - **\$285 million** (Alberta) committed
 - 1.3 million tonnes of CO₂ captured and stored each year
- **Alberta Carbon Trunk Line** (Enhance Energy/North West Upgrading)
 - 240 km (149 mile) pipeline initially transporting CO₂ from the Agrium Redwater fertilizer Complex and North West oil sands Upgrader for use in enhanced oil recovery
 - \$63m (Federal) + **\$495m (Alberta)** = \$558 million committed
 - 1.6 million tonnes of CO₂ captured and stored each year (initially)
 - Will transport up to 14 million tonnes of CO₂ each year (excess pipeline capacity)

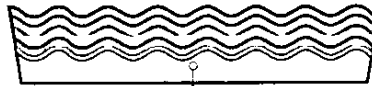


Alberta

Responsible Water Use



**AVERAGE ANNUAL FLOW
OF THE ATHABASCA RIVER
(633 M³/SEC)**



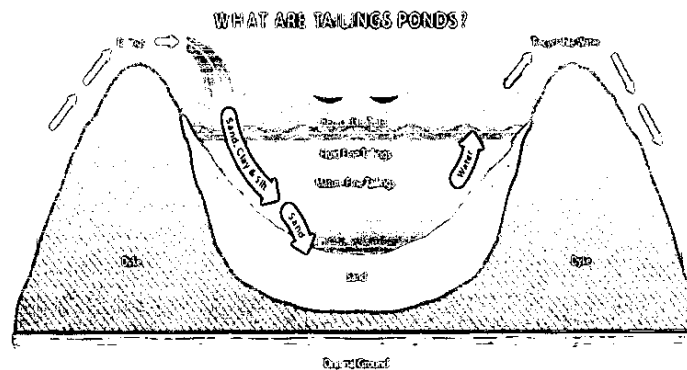
Oil sands water use
• less than one per cent of
average annual flow

- **Strict limits on water use through Water Management Framework for the Lower Athabasca River**
- **Total water use for 2008 was less than 1% of average river flow; about 85% of water used is recycled water**
- **Between 2002 and 2007, mining operations reduced total water used by almost 40% and increased bitumen production by almost 50%**



Alberta

Tailings Pond Management



Alberta

Land Management

Managing Today

- Strong technical review for any new tailings facility
- ERCB Directive – faster reclamation; less fluid tailings

Vision for the Future

- First tailings pond will be reclaimed in 2010
- Zero growth in tailings

Research to Achieve Vision

- Consolidated to dry tailings
- Water recycling
- Research partnerships



Alberta

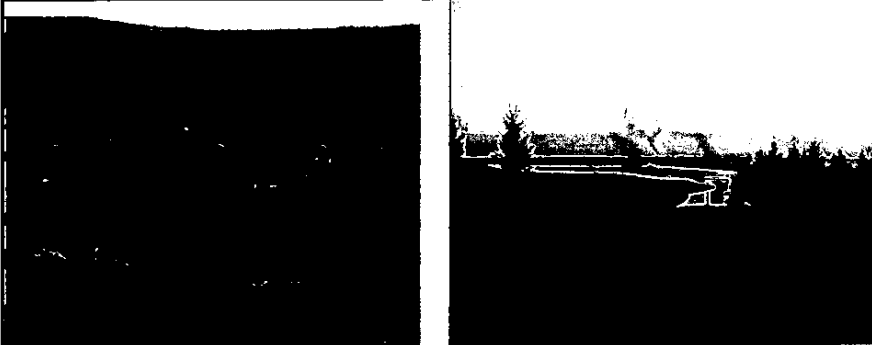
Land Reclamation

- About 205 square miles of land have been disturbed by oil sands mining activity.
- Reclamation is a condition of project approval; Reclamation security bond = \$828 million
- As of March 2008, 25 square miles of land disturbed by mining was reclaimed or undergoing active reclamation.
- Industry has planted more than 7.5-million tree seedlings towards reclamation efforts.



Alberta

Reclamation Potential



Alberta

Oil Sands Strategic Plan

"Responsible Actions: A Plan for Alberta's Oil Sands"

- Released on February 12, 2009
- 20-year strategic plan outlines vision for sustainable and responsible growth
- Involved consultation and scenario planning with 16 departments
- Aligned with the Provincial Land-use Framework and Energy Strategy

Outcomes:

- Optimized economic growth
- Reduced environmental footprint
- Increased quality of life for Albertans today and in the future.



Alberta

Impact of Alberta Oil Sands Development on the Alaska Economy

- Economic benefits of oil sands development and production do not fall solely to one US economic sector or just one region of the country.
- Increase in Alaska industry output (\$US):
 - 2010 = \$58 million
 - 2015 = \$169 million
 - 2020 = \$200million
 - 2025 = \$211 million
 - Annual Average = \$156 million
- Change in Alaska "value added" GDP (\$US):
 - 2010 = \$30 million
 - 2015 = \$87 million
 - 2020 = \$106 million
 - 2025 = \$113 million
 - Annual Average = \$82 million



Alberta

Impacts of Alberta Oil Sands Development on the Alaska Economy

- Indirect and induced impacts of Canadian oil sands development and production will result in employment increases across the US. In Alaska, incremental employment is estimated to be (in person years):
 - 2009-2010 = 500
 - 2011-2015 = 900
 - 2016-2020 = 200
 - 2021-2025 = 100

Source: "The Impacts of Canadian Oil Sands Development on the United States' Economy". Canadian Energy Research Institute, October 2009.



Alberta

**Impacts of Alberta Oil Sands
Development on the US Economy**

National Impacts (\$US Billions)	2010	2015	2020	2025
U.S. Output	23.0	69.2	78.5	80.9
U.S. GDP	11.5	34.0	40.4	42.2



Alberta

**Impacts of Alberta Oil Sands
Development on the US Economy**

National Impacts (Thousand Person Year)	2009 – 2010	2011 – 2015	2016 – 2020	2021 – 2025
U.S. Employment	172	343	88	22



Alberta

Thank You

