



 **electricity**
SECTOR COUNCIL

 **CONSEIL SECTORIEL DE
l'électricité**

IEEE-NERC Workshop Nov 2007

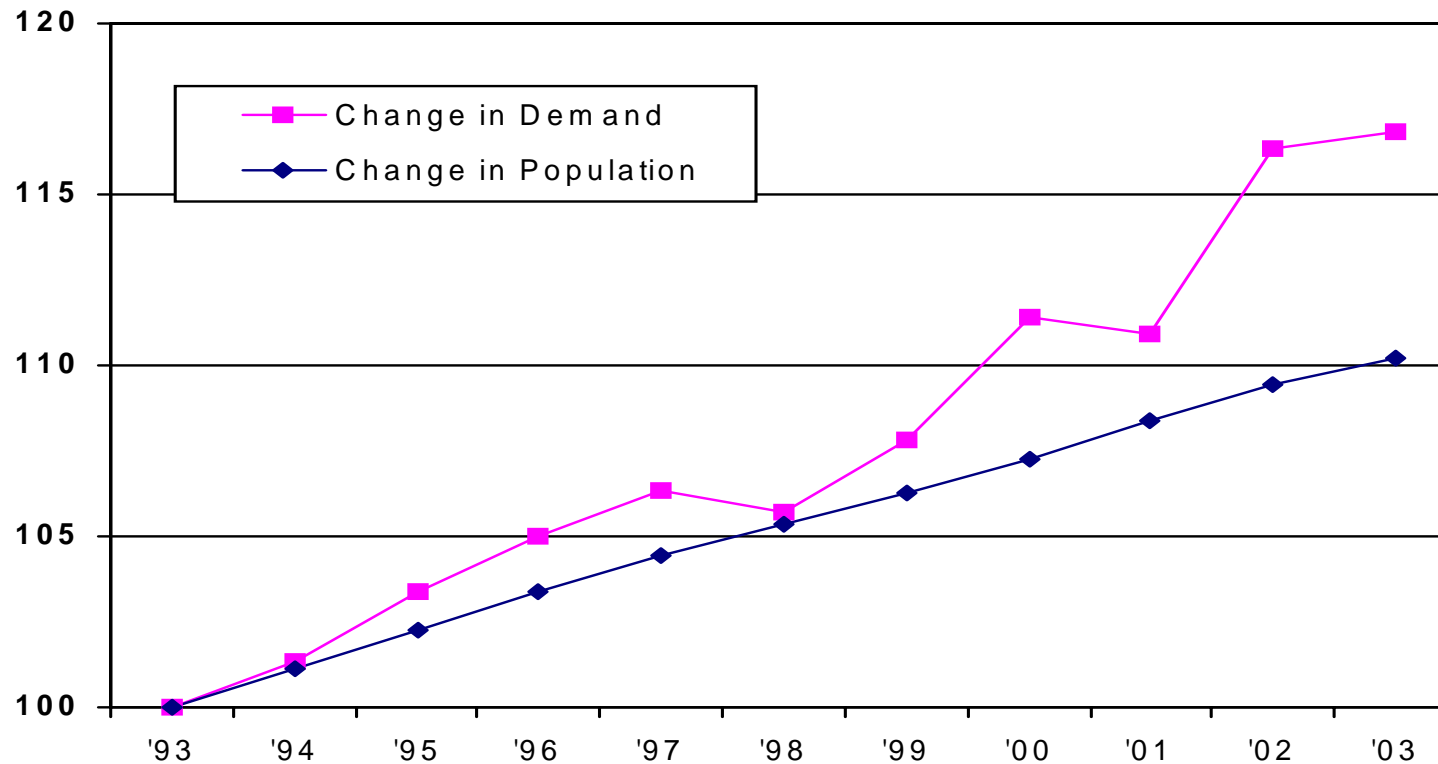
Canada^{🇨🇦}

This project is funded by the Government of Canada

Canada – A world leader in electricity production

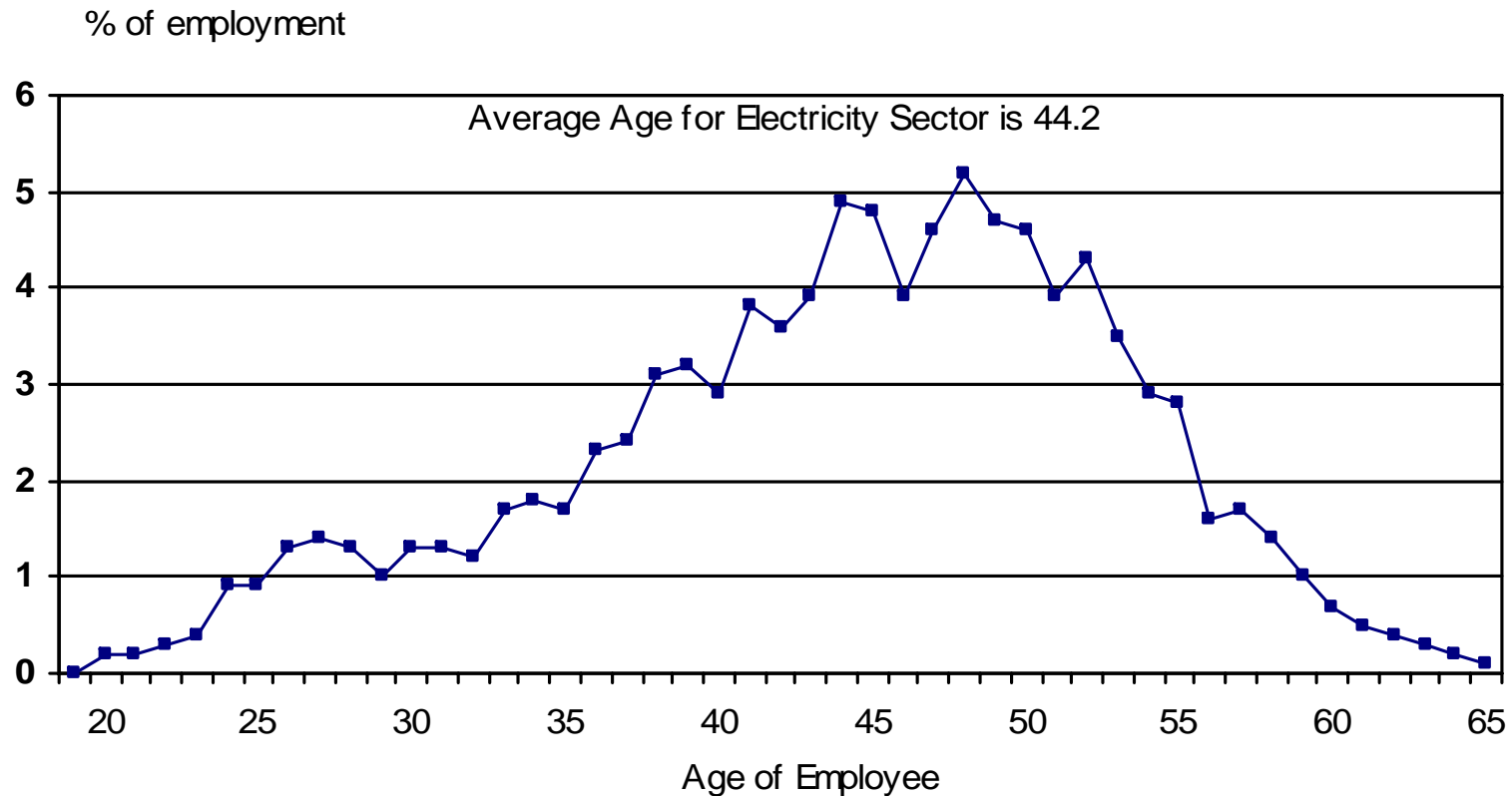
- Third largest electricity producer in the world on a per capita basis
- Production increased 10% in last 10 years
- Most diversified generation in the world: 60% hydro, 24.2% thermal, 12.4% nuclear, 3.4% other
- Last 10 years the fastest growing generation source was natural gas at 132% increase, anticipated that wind will grow the fastest in the coming 10 years
- Major exporter of electricity
- Among the lowest prices in the world

Increasing Electricity Demand



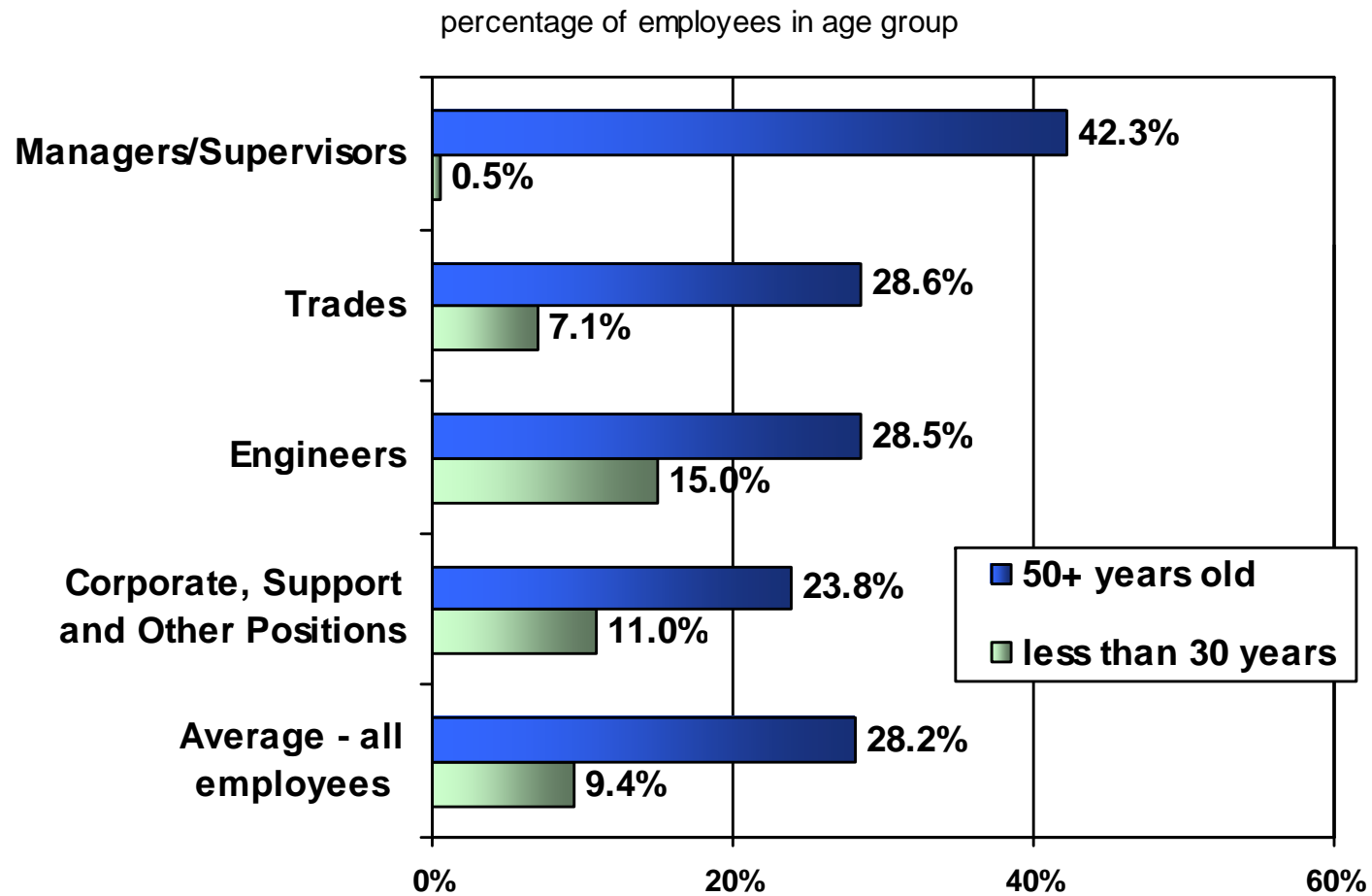
Change in Canadian Population and Electricity Demand From 1993 to 2003
(Index- 1993 = 100)

Aging Canadian Workforce

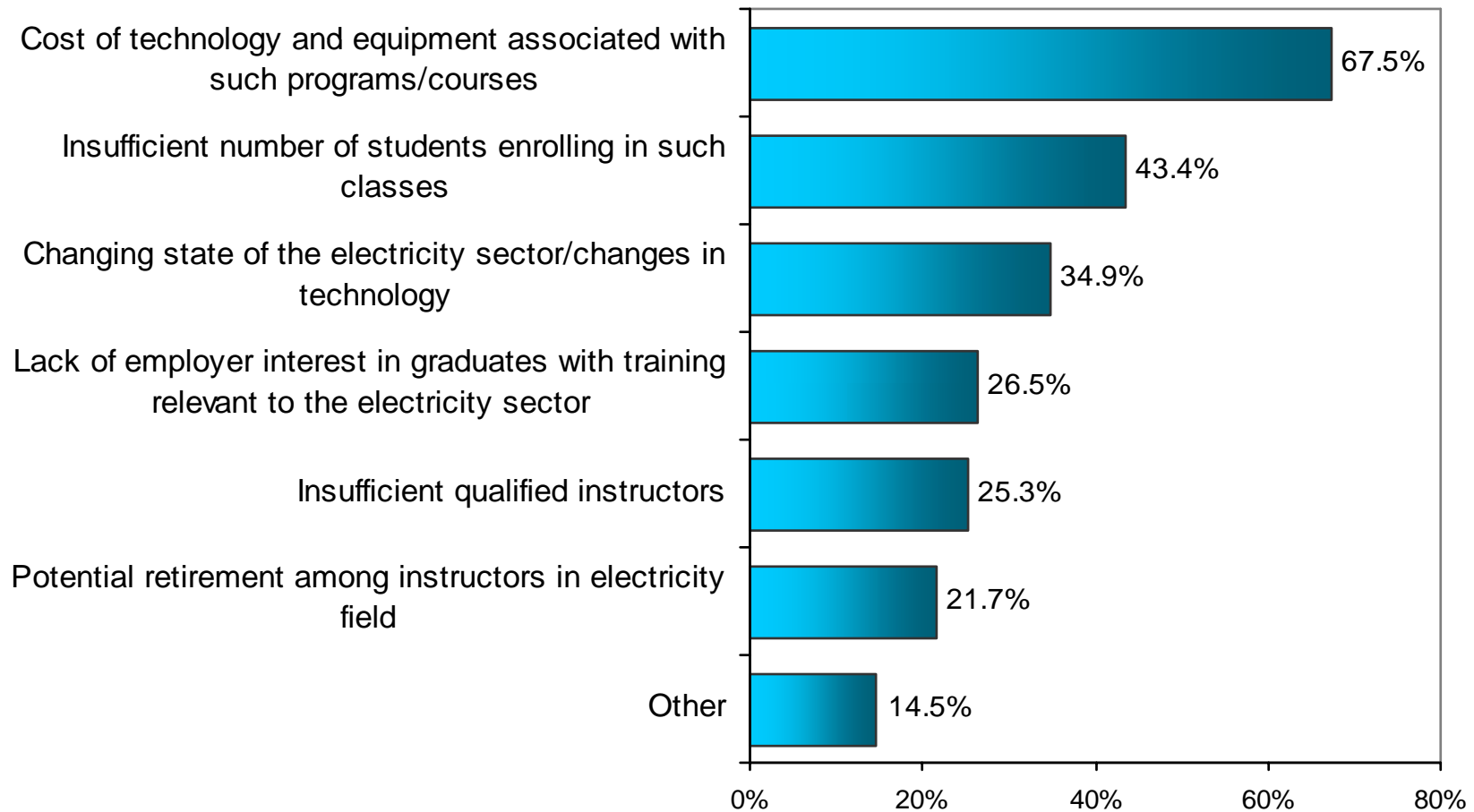


Source: 2004 Canadian Electricity Sector Study Employee Survey (n=3,330)

Aging Workforce by key occupation – 2004 data



Challenges cited by Educational Organizations – 2004 data



Workforce by key occupation

	Canada	
	Number	% Share
Managers/Supervisors	5,015	14.4%
Engineers		
Electrical/Electronic	4,755	13.7%
Mechanical	1,800	5.2%
Engineering Technologists/Technicians	2,700	7.8%
Total – Engineers	9,255	26.6%
Trades		
Power System Electrician	3,285	9.5%
Construction Millwright/Industrial Mechanic	1,715	4.9%
Stationary Engineers	1,230	3.5%
Industrial Instrument Tech/Mechanic	1,075	3.1%
Power Systems and Power Station Operator	5,600	16.1%
Power line Worker	7,565	21.8%
Total Selected Trades	20,470	58.4%
Total	34,740	100.0%

Note: Total excludes support/other positions.
Source: Statistics Canada, 2001 Census

2004 Sector Study Retirements

Business Line	Estimated Current # of employees	Estimated # to Retire within One Years		Estimated # to Retire within Next 6 Years	
		Percentage	Number	Percentage	Number
Generation	16,343	12.3%	2,010	24.3%	3,971
Transmission	1,952	34.5%	673	55.1%	1,076
Distribution	4,244	8.3%	352	16.6%	705
Integrated	28,723	16.3%	4,682	35.4%	10,168
Total*	57,657	15.5%	8,937	29.6%	17,066

One-third of employees are expected to retire in the next six years

2004 Workforce Study Data – Supply/Demand Gap

Group	2005-2009		2010-2014	
	Low	High	Low	High
Engineers	399	637	362	697
Trades/other non-support	1,606	2,577	1,478	2,845
Total	2,005	3,214	1,840	3,542

Dependance on Immigrants for Labour Growth

- By 2021 the Canadian population is expected to grow by 32%
- During that time the youth population is only growing 2%
- The Immigrant population will grow 77%

Increasing Urbanization

- By 2031, 94% of the Canadian population will live in urban areas
- Most of the population growth will be in three major metros
- By 2031 the population of these metros will grow:
 - Toronto up 73%
 - Vancouver up 64%
 - Montreal up 27%

Summation – Environmental Scan

- Rising demand
- Change in technologies and energy mix
- 2 categories of energy talent support needed, small home producer, larger scale generation from run of river hydro to wind, transmission & distribution
- Competition for traditional talent sources
- Declining youth cohort, declining rural cohort
- Rising dependence on internationally trained worker
- Increased need for adult training support whether to re-skill or credential immigrants/foreign trained or support family members in settlement

UNENE

- The University Network of Excellence in Nuclear Engineering (UNENE);
- Main purpose is to assure a sustainable supply of qualified nuclear engineers and scientists to meet the current and future needs;
- Nuclear professorships in six Ontario universities;
- Funding is provided by both industry and government and supports the development of talent in the nuclear industry;
- **INDUSTRIAL PARTNERS** Atomic Energy of Canada Ltd, Bruce Power, Ontario Power Generation, Canadian Nuclear Safety Commission, CANDU Owners Group, Nuclear Safety Solutions
- **UNIVERSITY PARTNERS** McMaster U, Queen's, U of Ontario Institute of Technology, U of Toronto, U of Waterloo, U of Western Ontario, Ecole Polytechnique, U of New Brunswick, Royal Military College, U of Guelph

Institute for Electrical Power Engineering

- In 2001, a partnership between Hydro-Québec and six Québec-based universities created the « Institute for Electrical Power Engineering;
- HQ provided \$4 million start-up funds to guarantee the necessary capital;
- Funds have since been leveraged with additional monies from the Canada Foundation for Innovation (CFI) to ensure power engineering graduate studies is an option for students;
- Designed to pool scarce human and financial resources, reduce redundancies, and promote concerted action in universities and industry;
- In the fourth year of undergraduate studies, up to 50 students come together to access common teaching and laboratory resources; each university provides up to two faculty members and input into the design of the common fourth-year of study;
- Additional industry partners provide scholarships and aid to students and participate in the design of curriculum.

Provincial Engagement – BC Energy WF Strategy

- All Energy communities, focus on RE
- Lead by the BC Ministry of Energy
- Dedicated staff member with focus on labour, Director level
- Specific commitment to work with ESC
- Actively engaged in finding \$ to support endowments for 3 chairs, one Power Engineering
- Actively encouraged re-establishment of power engineering at UBC
- Fully subscribed for all places

Provincial Engagement – AB Energy WF Strategy

- Primary focus on oil and oil sands development, electricity secondary, RE not specifically mentioned
- Lead by Ministry of Labour
- Active participation with ESC
- Provincial unemployment at about 3.6%
- Transmission build delayed due to lack of labour
- Wind build waiting for Transmission build

The Electricity Sector Council – Projects

Advanced Career and Workforce Training

- *Occupational Standards*
- *Foreign Trained Worker*
- *Succession Planning*
- *Knowledge Management*

Labour Market Transition
PLT situational analysis
Renewable Energy Occupational Stds.

Youth and Education

- *First Work Project*
- *Aboriginal workforce participation*
- *Wind Energy Curriculum*

Trade UP for Success
Electricity First Work

New Technology & Industry Directions

- *Labour Market Information*
- *Ontario Labour Market Information*

Skills for Sustainable Energy

Partnerships and Outreach

- *Building Connectivity*
- *Stakeholder Engagement*

Improving Access to Under-represented



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Background Slides

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Occupational Standards

Currently starting the development of 5 occupational standards:

- Project Manager (*with profiles for Planner, Construction Manager, and Wind Project Developer*)
- Operator (*with profiles for Power Systems Operator and Power Station Operator*)
- Electrical Technologists and Technicians
- Power Protection and Control Technicians and Technologists
- Wind Turbine Technician

PLT being revised in red seal next year, we have input
Negotiations with NRCAN for solar and Georexchange stds.

Foreign Trained Worker

TRADES INTAKE THROUGH IMMIGRATION:

Landings by province in 2005 for electricity sector trades-related occupations were very low

Power systems and power station operators (9)

Electrical power line workers (55)

Power system electricians (27)

Utilities managers (10)

'Bright Futures in Canada'- Conference Nov 7/8 in Ottawa

Labour Market Information

- Web-based primary data information system
- Align with HR metrics work ongoing by US electricity companies e.g. NHRG, Edison
- Drill down to sector specific information such as Nuclear
- Draft survey in development, seeking to confirm key occupations to include
- First pilot of survey this fall with results expected in early 08
- Goal is to provide information similar to 2004 study on an ongoing basis

First Work

- Funding support to a 6-12 month internship for new graduates from technician/technology/engineering
- Provides about 1/3 of dollars for salary up to 12K maximum
- Some spots still available, must file application before candidate starts
- Program ending with government fiscal in March 08, Sector Council program has applied to continue

Transition Project

- To assist employers to integrate experienced workers from sectors of declining workforce need
- Preliminary data indicates we have limited opportunity given the high level of training needed for workers in our industry – 76% of our workers have postsecondary
- Some possibilities but only in key regions and largely in the apprentice-able trades, very geographic specific
- Recommended: a database of available workers such as that maintained by Comm/paperworkers union, youth awareness initiatives, mentorship for youth and internal workers

Lineworker Project

- Goal is to provide an overview of the lineworker occupation in Canada
- Includes training, qualifications, terms of work, compensation, barriers to recruitment
- Intent is to develop a matrix of jurisdictional differences, call together a national meeting of key players to review and discuss possible opportunities to increase the pool of this critically needed occupation
- Committee participants from MB Hydro, NB Power, BC Hydro, Hydro One, IBEW, PWU, ACCC, CCDA, NS Power, Line Contractors, invitations extended to NWT Power, Enmax & Horizon

Connectivity

- Goal is to bring together leaders in the business: governments federal and provincial, unions, management, regulatory, educators into a national meeting to examine top 5 issues in the industry and define recommendations
- Those recommendations go to our regional working groups for review and input
- Outcomes of regional meetings back to another national meeting of key leaders for final industry strategy we will implement as a council
- Intent is to build relationships and partnerships where none previously existed to the benefit of informing ESC work

Wind Turbine Technician Curriculum

- Funded by NRCAN to translate this curriculum
- Curriculum developed by CGEP de Gaspésie
- English translation available to any Canadian training organization free provided ESC and Government of Canada contributions referenced
- Workbooks and other materials remain the property of CGEP
- Memorandum of Understanding with ESC to use this

Government of Ontario

- Contracted to provide Ontario specific labour market information
- To advise on HR Best Practices
- To review Ontario supply from educational institutions and match with anticipated provincial demand
- Project expected to end in early fall with results released by the Government by year end

Succession Planning

- Goal is to promote the use of succession planning within the industry and to develop web based tools for the business to use
- Intent is to ensure that succession planning is done to the operational level i.e. for apprenticeships and line operations staff to ensure an effective labour force supply to the business on a continuing basis
- First round RFP received no bids, committee reposting RFP however timelines likely impacted

Under Development: Career Awareness-Trade Up

- Would use tradeup.ca web and marketing materials
- Edu-kit folder
- BC interested in becoming first partner using the tag line 'bright futures' rather than the trades focus
- Could also do 'line of business' specific materials such as nuclear related materials
- Seeking industry support and interested in discussing what HRSDC can do in partnership

Under Development: Aboriginal WF Development

- Seeking to build on the best practices identified in the 2004 sector study
- A youth camp based on the Manitoba Hydro model
- Additional best practice model to be determined by research
- Toolkit for aboriginal workforce development specific to our industry

Under Development: Renewable Occupational Stds

- NRCAN project
- Funding to work in tandem with the ESC's existing occupational standards project to fund an additional two occupational standards, one for geoexchange and one for solar
- Intent is to provide rigour to the curriculum development happening at the college level, currently there are near weekly announcements of college curriculum for these industries but no consistent pan Canadian standard of what these programs are 'training to'

Under Development: Skills for Sustainable Energy

- Training/occupational standards needs/gap assessment for 5 renewable/sustainable energy technologies such as tidal or energy efficiency
- Prioritization of technologies and next steps by the steering committee reflecting a consensus understanding of what must be done first
- Creation of a renewable specific module to the ESC LMI survey recognizing differing occupational names/types and candidate sourcing

Provincial Working Groups

- BC, Alberta, MB, ON, Atlantic
- Seeking to establish Quebec group and to engage SK in a prairie region working group
- Province specific initiatives, opportunity to link with provincial governments to work on region specific activities

ESC Board of Directors

- **Tom Goldie, Hydro One, Chair**
 - **Jerry Wilson, IBEW, Vice Chair**
 - **Deb Carey, PWU**
 - **Ani Gole, PhD, U of M**
 - **Leslie Forge, Soc. Of Energy Professionals**
 - **Robin Lucas, BC Line Ass'n**
 - **Steve Mauri, Canlyte**
 - **Gary Rodford, BC Hydro**
 - **Hydro Quebec Distribution**
 - **Doug Topping, EPCOR**
 - **Catherine Cottingham, ESC (ex-officio)**
 - **Lina Doucet, Bruce Power**
 - **Deborah Wolfe, Engineers Canada**
 - **Norm Fraser, Hydro Ottawa**
 - **Sam Giandomenico, OACETT**
 - **Joyce MacLean, Toronto Hydro**
 - **Dale Watts, Red River College**
 - **Carmen Dybwd, Energy Council (ex officio)**
- Permanent Observers:**
- **Jeff Vachon, HRSDC**
 - **Al Clark, NRCAN**
 - **Brigitte Hebert, CEA**
 - **Peter Woods, CCDA**
 - **Carole Proulx, CUPE**



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Thank you! Merci! Safe Journey!

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