

GREEN ENERGY PLAN

Protecting our economy, our province, and our planet



EXECUTIVE SUMMARY

Coal, oil and gas have been Albertan's trump cards since our province's earliest days. These resources have provided employment, fueled our homes, businesses and vehicles. They have also provided a provincial revenue stream that has helped Albertans enjoy a quality of life second to none.

But the rules of the game are changing. Fossil-fuels are not renewable and Alberta is already seeing some of its supplies start to decline.

The cost of fossil fuel production and extraction is going up while supplies become harder to find. Consumers are also becoming less willing to accept the environmental damage associated with fossil-fuel energy.

The future health of our energy based economy, and the health of our environment both depend upon our ability to adapt and promote newer renewable forms of energy.

Alberta must change.

The time has come for Albertans to embrace renewable, green energy and be more careful in our use of energy, just as people in jurisdictions around the world have been doing for years. It is time for the province to steward this process, and provide incentives for change.

This will not be an easy process, but if we act now, we can utilize the wealth, resources and energy expertise we already possess to develop a green energy economy for the future.

The Alberta NDP Green Energy Plan uses revenue collected from enhanced royalty rates on fossil fuels to develop an industry based around green energy. The fund would promote financial incentives for small scale renewable energy projects, government action to produce renewable energy of a larger scope, and incentives to embrace energy conservation.



GREEN
ENERGY
CHALLENGE

THE GREEN ENERGY CHALLENGE

Consumers are facing tough choices when it comes to finding cheap, reliable sources of energy to fuel our vehicles, heat and light our homes, run our businesses and power our industrial plants.

Our traditional energy supplies – oil, natural gas and coal – are becoming increasingly costly to produce and much more costly to purchase.

We cannot continue to place the future health of our economy on fossil fuels.

The mining and manufacturing of traditional fossil fuels wreaks havoc on our environment. The mining of tar sands destroys huge areas of forest and produces entire lakes filled with toxic waste. The burning fossil fuels produce a tremendous amount of air pollutants and greenhouse gases, and naturally-occurring Uranium in coal exposes residents downwind of a coal plant to more radiation than would a nuclear reactor.

Burning fossil fuels produces sulphur dioxide – the primary cause of acid rain, which severely damages water bodies and plant life downwind of the emission source. Fossil fuel emissions also contain mercury (a known cancer-causing agent) and particulates that contribute to asthma and other lung disorders, along with a host of environmental problems.

The combustion of fossil fuels also creates greenhouse gases that cause global warming. This threat is a serious one, given its potential for environmental damage at home and abroad. A United Nations sponsored panel of experts has predicted that left unchecked, climate change will cause major flooding of coastal areas, a substantial increase in forest fires, and periods of extreme heat and drought that could trigger mass starvation in developing countries.

Here in Alberta, experts have suggested we can expect to see a sharp reduction in fresh water supplies as the glaciers finish melting, much lower lake levels, new tropical diseases, more pests like the pine beetle affecting our forests, and many more severe weather events like tornadoes and heavy rain storms. Meanwhile, the Alberta heavy oil industries are using up a greater and greater portion of our dwindling fresh water resources.

In the face of all this, the Alberta NDP recognizes the time for change has arrived. It is time the province got serious about producing energy from renewable, non-greenhouse gas producing sources such as solar, and wind.



MEETING THE GREEN ENERGY CHALLENGE

The Alberta NDP green energy plan will protect our environment, provide affordable energy sources, and diversify our economy. To that respect Alberta NDP Green Energy Plan has the following goals:

- Reduce damage to the environment caused by the need for energy
- Produce more affordable, environmentally cleaner forms of energy
- Encourage new and “green” industry and business development in Alberta

To achieve those goals, the Green Energy Plan includes a Green Energy Fund that will receive \$2 billion per year, to be used in three areas:

- The funding of energy efficient retro-fitting and alternative energy production systems for individual houses and buildings
- Funding alternative power generation projects such as solar and wind farms
- Stimulating and promoting research and development in alternative/ green energy technologies and the promotion green and alternative energy industry growth

INVESTING IN CHANGE

Revenue for the Green Energy Fund would come primarily through enhanced royalties from Alberta’s biggest source of industrial pollution: the tar sands.

International petroleum and royalty analyst Pedro Van Meurs already noted in a 2007 report that Alberta’s royalty take is low compared to other jurisdictions. It is time to change that situation.

The current royalty system was designed to stimulate investment in the tar sands when oil prices hovered at \$20 per barrel. But, as technology and production systems have matured and oil prices hover above \$80 per barrel, the time for a “low take” royalty system has long passed.

Alberta’s NDP is considering a number of measures to increase our royalty take for the purpose of building the Green Energy Fund. Some of these proposals have been developed by stakeholder groups such as the Pembina Institute. These ideas can be broken into two distinct categories; boosting revenue and prudent fiscal planning.

Boosting Revenue

- Mandate at least basic value added/upgrading for all bitumen mined in Alberta be done in Alberta.
- Add an interim, per barrel tax on all bitumen exported outside the province (roughly 460,000 barrels a day).
- Add a variable royalty structure that would increase the royalty revenues when oil prices pass a peak threshold.
- Increase royalties on other non-renewable resources such as coal.
- Ensure that new energy sources such as coal bed methane have rigorous and equitable royalty systems.
- Establish a bitumen pricing system.

All additional royalties, up to \$2 billion per year, will be dedicated to the Green Energy Fund. The fund will reach a maximum of \$20 billion.

The Green Energy Fund would have four broad applications:

- An energy reduction strategy, including small scale generation
- Large scale projects
- Research and development





ENERGY REDUCTION & SMALL SCALE GENERATION

Individual, small scale, initiatives

Individual, small scale, initiatives refer to technologies and projects that can be applied on a micro level, home by home, building by building. Such projects could retro-fit houses to make them more energy efficient or financing existing technologies for at-home energy production.

Fund for energy efficiency

Alberta's NDP would create a revolving fund for interest free loans and grants to families, municipalities, school districts, health regions and other public bodies. These loans would be available for energy efficiency projects, with the funds being paid back by the savings realized through these projects. For example, if a municipality wishes to replace all light bulbs in their buildings with high efficiency, florescent lighting – it could apply to this fund, paying back the loan with funds earned through reduced energy use.

Solar Energy

Solar energy has tremendous potential in Alberta.

Along with its wide range of applications, solar energy has the distinct advantage of being wide open to individual participation. Virtually anyone can purchase and install solar panels at home or at their business.

Two good examples of solar power are of the highly successful Drake Landing project in Okotoks, and the Net Zero Energy home in Edmonton.

Helped with approximately \$5 million in federal and provincial subsidies, the Drake Landing project in southern Alberta fitted solar panels onto the garages of 52 brand new homes. Liquid in the solar panels is heated and then circulated to the homes. It is also used to heat a large underground water tank, which stores heat for use in the winter. The project quickly sold out, home heating bills are down and each house is expected to produce 10 fewer tonnes of greenhouse gas per year.

Meanwhile, in the Edmonton community of Riverdale, a group of citizens have banded together to produce a Net Zero Energy home.

Now under construction, the 1,870 square foot side-by-side duplex features a bank of solar photovoltaic panels on the roof to meet the building's electrical needs and another panel of solar thermal panels along the top of the south-facing front of the building to provide all the heat it requires. Heavily insulated (R56 walls, R100 ceiling, R30 basement floor, quadruple-glaze windows), it will have no gas line and its excess electrical energy will be sold back into the provincial grid during summer months.

We believe many more projects like this should be undertaken in Alberta.

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Energy reduction & small scale generation



The State of California believes it will see solar panels on the roofs of one million homes in ten years. It is feasible to believe hundreds of thousands can be installed in Alberta.

Geothermal

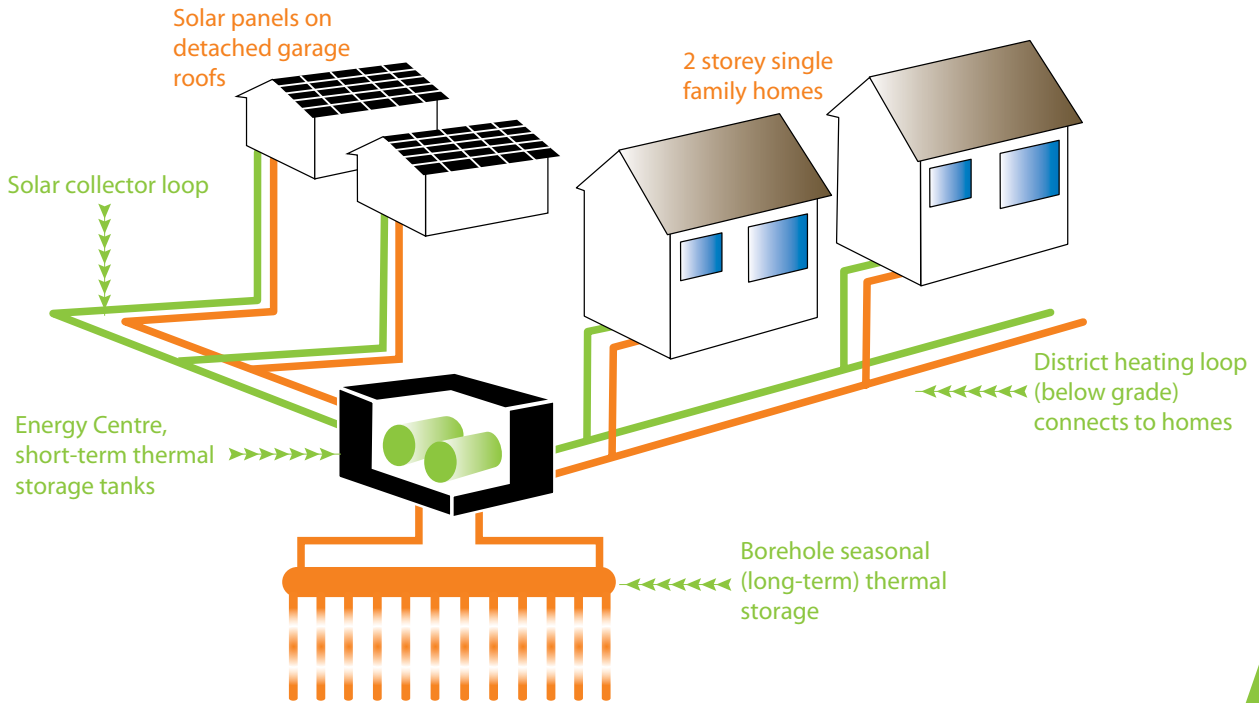
Using heat seasonally stored in the earth, opportunities exist for property owners to heat their home or business with geothermal energy storage.

In this instance, pipes are installed into the ground (sometimes extending to a depth of 250 feet) to allow glycol or a similar liquid to be warmed by summer heat and stored in the earth. The liquid is then pumped through a heat exchanger in the home where the air is warmed and blown throughout the building, much like a traditional forced-air furnace. During the summer, the reverse cycle is used to recharge the heat stored deep in the ground.

Concept Homes Ltd. is a good example of a local firm attempting to launch a geothermal-heated residential project. With enough land for 70 – 80 units of housing in the Castle Downs district of north Edmonton, the builder recently surveyed a number of its customers to determine their level of interest.

They discovered the majority of their customers would like to use geothermal energy and roughly 1/3 of their customers were willing to pay a premium up front to install it. However, the majority also said they knew very little about geothermal energy systems and would like to learn more before they made a commitment.

Concept Homes is convinced that their housing project, and many more like it, could quickly proceed if the provincial and federal government would provide some seed money and do a better job of training tradesmen and educating citizens about the benefits of geothermal energy.



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GREEN
FUTURE

BUILDING A GREEN FUTURE FOR ALL

LARGE SCALE PROJECTS

Large scale projects produce hundreds of megawatts of electricity and harness economies of scale to power thousands of homes.

The Green Energy fund would support primarily two forms of large scale, renewable power generation projects: Wind energy and Concentrated Solar Power/Solar Farms.

Wind Energy

Wind energy in Alberta has tremendous potential, particularly in southern Alberta.

With an estimated 3,000 megawatts worth of wind power projects in the works, the viability of wind power is already obvious to the major conventional power producers and should be supported unequivocally.

Future research and development funding combined with seed money for wind power companies are necessary for the proper development of this resource.

Concentrated Solar Power and Solar Farms

The development of concentrated solar energy projects and solar farms holds strong potential in the development and sustainability of green energy.

Concentrated solar energy projects use mirrors in various shapes and configurations. The mirrors focus the sun's rays onto an energy receiver, which contains a liquid which is quickly heated. The high-temperature liquid is then transported to a plant to generate electricity. Concentrated solar projects have been built in the southwestern United States and Europe.



Solar farms produce significant amounts of electricity by linking a large number of solar panels in one location. A recent example is a project just announced by OptiSolar Farms Canada Inc., which intends to install one million solar panels on four farms near Sarnia Ontario. Scheduled for completion by 2010, the project is designed to provide 40 megawatts of power – enough to handle the electrical needs of 6,000 homes.

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BUILDING A GREEN FUTURE FOR ALL

Research and Development

The third pillar of the Green Energy Plan is the creation of the Alberta Renewable Energy Corporation (AREC), a provincially-owned crown corporation which would be charged with helping develop energy projects on a larger scale as well as R&D.

Alberta needs to make significant investments in research and development if the renewable energy industry is to gain a significant foothold in our province.



Whether discussing the development of solar energy technology, geothermal energy systems or wind farms, it is clear that much work needs to be done to make equipment more efficient and less costly.

It is also essential that Alberta's workforce be brought up to speed, so there are sufficient technicians to install, maintain

and repair renewable energy systems. This means Alberta's post-secondary educational institutions would need to get more heavily involved, with the province providing financial support.

It is critical that net metering be implemented in Alberta in a manner that doesn't financially burden families. This would allow small energy generators – even individual homes – to sell excess electrical energy to the grid on days when they generate more than they need (for solar projects, this would typically be during long, bright, summer days). This process is well along in other provinces; Alberta needs to catch up.

The Green Energy sector is still very much in its embryonic stages. Efficiencies and economies of scale to make green technology truly competitive with combustion based power generation are being made every day. However, the various technologies still have some way to go before they can be truly competitive.

The AREC would be charged with helping to develop energy projects on a larger scale as well as R&D through the Green Energy Fund. AREC would be involved in the following capacity within the green energy sector:

- Fund basic research at public research and educational institutions into the development of green/alternative technologies and applications.
- Fund innovative designs and ideas coming in from private individuals and commercial institutions.
- Host competition style projects (similar to the one hosted by the X Prize Foundation) on difficult seemingly intractable technology problems.
- Create knowledge and business clusters to facilitate innovation in Alberta, a "Green Silicon Valley" for the generation of new ideas.
- Provide seed money for new/innovative alternative technology companies.



CONCLUSION

Even if we put aside the consequences to the environment of our reliance on oil, gas and coal, that reliance has an economic consequence that must be addressed. The boom and bust economy and the lack of diversity in our economic profile leave Alberta vulnerable in the future.

Governments have talked about diversifying the Alberta economy for years, but little has been done about it. The Alberta NDP Green Energy Plan takes our energy expertise, and the wealth it is creating, and puts it to use planning for the future.

By using our wealth to create a green energy economy, we protect our economy, our province, and our planet.

