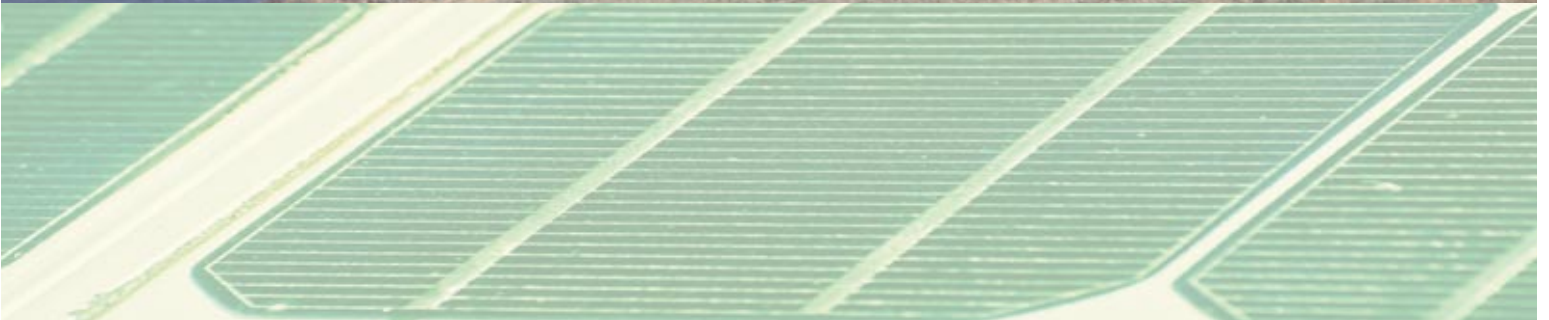


POWERING ONTARIO COMMUNITIES: PROPOSED POLICY FOR PROJECTS UP TO 10 MW



A co-operatively owned wind power plant within the city of Copenhagen





**STUDY OUTLINING POLICY
OPTIONS TO ENCOURAGE
SMALL OR COMMUNITY-
OWNED RENEWABLE
ENERGY GENERATION
IN ONTARIO**

*Prepared by the Ontario
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EXECUTIVE SUMMARY

The Ontario Sustainable Energy Association (OSEA) was asked by the Ontario Ministry of Energy to examine the criteria for a pilot program offering standard supply contracts to small or community-based renewable power projects.

The Ministry's recent 300 MW Request for Proposal (RFP) for renewable energy was intended to launch development of the province's renewable energy strategy. Inherent in this was the understanding that the tendering process lent itself to large-scale projects by a small number of large developers. Subsequent to the successful closing of the RFP, the province has indicated a commitment to engage the small or community-based renewable energy sector in a pilot program to develop distributed generation.

There is growing recognition that a mechanism other than the tendering process is needed to foster development of distributed generation rooted and responsive to the local community. Furthermore, European experience indicates that small, distributed projects with community or local participation result in more renewable energy developed more quickly and increases the public's acceptance of the technology.

The preponderance of the 16,600 MW of wind generating capacity operating in Germany today are installed in small projects (less than 10 MW) distributed across the landscape. Many of these projects were developed with local or community participation.

Key Program Recommendations

Based on comprehensive research gathered from best practices around the world, along with consultation with a wide range of stakeholders in Ontario, OSEA has concluded that the optimal approach is a Standard Offer Contract (S.O.C.) mechanism. The cornerstones of this model are 20-year fixed-price contracts for eligible projects, and the right to interconnect to the grid. These core components are underpinned by a rigorous and transparent pricing model that can be applied to all forms of renewable energy. The pricing model provides minimum profitability at sites with moderate resources to stimulate strong and distributed market growth while at the same time it precludes undue profits at sites with energetic resources.

Standard Offer Contract programs work best when total built capacity is not capped as capping leads to gaming and hoarding. The OSEA proposal provides other options for controlling the total amount of renewable energy brought on stream through the S.O.C. program.

Individual projects may be capped at 10 MW. While an initial 10 MW project limit may be too low in light of today's multi-megawatt wind turbines and some hydro projects, the recommended review period can allow for this to be revisited and remedied if necessary. However,

Mitigating Supply Risks

A Standard Offer Contracts will reduce the province's supply risks that are inherent in the RFP process. Experience elsewhere indicates that only a percentage of winning bidders in tendering systems actually build projects. In some cases, such as Great Britain and France, the percentage of contracts executed is a fraction of those awarded.

Only 30 percent of contracted capacity under Britain's tendering system was actually installed. Between 1990 and 1998 the British government awarded contracts for 3270 MW of wind energy. By 2003 only 960 MW had been built.

In France's Eole program, of the 300 MW in contracts awarded only 70 MW were built. And of those only 30 MW are still operating under the original contracts. This was an important reason why France switched from a tendering system to a system of Standard Offer Contracts.

A recent study produced by the Cambridge – MIT Institute reaffirms numerous other papers comparing tendering mechanisms with Standard Offer Contracts to support wind power development. The paper concludes that tendering systems may not result in the contracted supply being built.

the review should consider *only* whether the limit should be raised, not lowered.

A complementary program to support community power adopted in some jurisdictions is a revolving public fund to support early stages of project development. Ontario's Ministry of Energy has given consideration to the development of a public fund for community projects. OSEA was asked to comment on this, and has provided recommendations for consideration. OSEA's recommendations can be found in Appendix A.

Worldwide wind prices (\$CAD/kWh)

Germany	\$0.14
France	\$0.135
Spain	\$0.106
UK	\$0.14
Italy	\$0.18

Ontario has no reason to expect to be able to build wind energy for less than the rest of the world. In fact since the majority of the technology is imported from Europe there are likely to be additional costs for Ontario.

Proven Success Worldwide

Renewable energy policy mechanisms incorporating these common core features have proven to be the single most successful mechanisms for the rapid development of renewable energy throughout the world. The vast majority of the wind power developed in Denmark, Germany and Spain, which account for approximately two-thirds of all wind capacity worldwide, came about through Standard Offer Contracts.

Not only has this policy mechanism resulted in more renewable energy generation than any other policy, but has also incubated a whole new manufacturing sector by allowing a steady flow of manufacturing orders from many and diverse project developers. As a result, Standard Offer Contract systems have led to significant job creation. In Germany, 45,000 people are employed in the wind industry alone, and this is forecasted to grow to 110,000 by 2010.

This success contrasts sharply with the inherent boom and bust cycle experienced where periodic project tenders (RFPs) have been the prevailing policy instruments.

Delivering Economic, Environmental and Social Benefits

Standard offer contracts provide a wide range of economic, environmental and social benefits for the province, including:

- Increased distributed generation resulting in improved system reliability, stability, and reduced line losses
- Increased rural investment at the local level
- Greater potential for attracting new manufacturing
- Addition of new skilled jobs
- Improved air quality
- Greater public awareness and acceptance of renewable energy
- Greater access to local and regional sources of capital
- Increased tax revenue
- Reduction in pressures for urban sprawl
- Greater certainty for investors
- Complete transparency

- Increased diversity and number of market players and investors
- Simplified program administration that reduces government costs
- Improved policy flexibility for achieving renewable energy targets
- Greater mitigation of supply risks

Program Cost

There is little or no cost anticipated for the provincial treasury. The prices for the power delivered under Standard Offer Contracts are incorporated into overall system pricing and borne by the ratepayer. The streamlined nature of the process will require minimal ongoing administration on the part of the ministry once the program is implemented

The maximum cost to Ontario ratepayers is expected to be \$.00050 (approx. five one hundredth of a cent) per kilowatt-hour from 1,000 MW of wind generating capacity in year 20.

Program Implementation Timing

OSEA recommends that this program be implemented immediately following internal review and public consultation. There is extensive experience in Europe with Standard Offer Contracts and the details of the proposed approach have been well documented in other markets. This knowledge permits the program to move forward in a timely manner. Early implementation also ensures that the province benefits from development of additional renewable energy capacity by the first renewable energy milestone in 2007.

Furthermore, while OSEA was contracted to look at potential policy mechanisms for small community based renewable energy projects, through our research we have come to the conclusion and recommendation that S.O.Cs be applied to the entire renewable energy market.

OSEA has extensive expertise in how Standard Offer Contracts are being used elsewhere and is ready to assist the Ministry of Energy further as needed.

KEY DETAILS OF PILOT PROGRAM

Pilot Program Component	Recommendation
Objectives	<ul style="list-style-type: none"> ● Broad participation ● Stable market ● Rigorous pricing model ● Applicability across all renewable technologies ● Simple, streamlined, cost-effective process
Eligible Technologies	<ul style="list-style-type: none"> ● Wind, small hydro, biomass, solar PV
Eligible Participants	<ul style="list-style-type: none"> ● Inclusive; e.g. farmers, rural landowners, community-based organizations, co-ops, First Nations, NGOs, municipal entities, private individuals, small businesses
Contract Design	<ul style="list-style-type: none"> ● Simple, transparent, basic terms of pricing, interconnect
Contract Term	<ul style="list-style-type: none"> ● 20 years; provision for extension at end of term
Project Size	<ul style="list-style-type: none"> ● Include all projects up to approx. 10MW, connected to 44kv or less distribution voltages
Overall Pilot Project Limit	<ul style="list-style-type: none"> ● Self-limiting, no capacity cap required; initial pilot end date 2010, review after 2 years
Pricing	<ul style="list-style-type: none"> ● Fixed price contracts; pricing based on specific technology and rigorous and transparent pricing model; inflation adjusted for 15% of price
Contract Application	<ul style="list-style-type: none"> ● Simple application process, site control required and Allocation Process ● Awarded on first come, first serve basis ● Options available to discourage hoarding, speculation
Interconnection	<ul style="list-style-type: none"> ● Guaranteed right of interconnection, simple terms ● 90 day application response from relevant utility ● Developer responsible for costs to point of interconnection; network upgrades (if required) borne by system
Pilot Review	<ul style="list-style-type: none"> ● Pricing & process review after year 2 ● Evaluation of rate of development under pilot versus expectations ● Participants required to report on performance with production data ● Any wind data to be provided to province for public benefit
Program Administration	<ul style="list-style-type: none"> ● Initially by Ministry of Energy staff, later Ontario Power Authority; Ombudsperson for disputes, coordination
Timing	<ul style="list-style-type: none"> ● Pilot should be implemented immediately ● Internal review, consultations, program details within 60 days, program implemented in 90 days

1. INTRODUCTION

The Ontario Sustainable Energy Association (OSEA) was asked by the Ontario Ministry of Energy to examine the criteria for a pilot program offering standard supply contracts to small or community-based renewable power projects.

The Ministry's recent RFP was successful in winning low-cost bids from proposals for large, central-station plants. These projects, if completed, will provide low-cost renewable power to the province, and are a positive first step in achieving the goals of increased generation from renewable energy and cleaner air. However, it is felt that they may not provide all the non-price benefits that dispersed renewable technologies can provide, nor spur a new provincial manufacturing sector. In part, this is because an important sector of the market was unable to participate.

The small/community-based renewable energy sector did not participate in the Ministry's 300 MW renewable energy Request for Proposal (RFP). The RFP's complex bidding process posed a significant barrier for farmers, community groups and others with small renewable power projects interested in helping the province meet its renewable energy targets.

A program that levels the playing field and taps into the interest and investment dollars for small renewable power projects can further advance the province's goals and deliver additional benefits. **Small renewable energy projects dispersed across the province may offer the benefits of distributed generation, pump more of the project development dollars through rural economies, increase public awareness and acceptance of renewable energy, and provide a stable domestic market for renewable energy technology that can spur regional manufacturing industries.**

OSEA was asked to identify and co-ordinate with stakeholders representing disenfranchised small renewable energy producers to draft a pilot program. The pilot program is intended to offer standardized contracts to meet both their needs, and the needs of the province for new sources of electrical supply.

OSEA was also asked to propose specific prices that might be used in Ontario's Standard Offer Contracts (SOC). Toward that end, OSEA sponsored a workshop with an internationally-renowned renewable energy economist to derive fixed-prices that could economically drive distributed development of small renewable power projects.

Ontario is at the forefront of non-European jurisdictions considering standard supply contracts offering long-term fixed prices. Through the province's unique ability to use ministerial directives, Ontario has the opportunity to demonstrate continued leadership in renewable energy by acting sooner than any other North American state or province in establishing Standard Offer Contracts. This can position the province to lure new manufacturing jobs and play a central role

in determining the direction of renewable energy development on the continent.

The following report outlines the features of Standard Offer Contracts, the rationale and benefits of this mechanism, and the suggested framework for the implementation of a successful pilot program.

2. ENGAGING ONTARIANS IN MEETING THE NEED

OSEA's experience in working with communities across the province demonstrates that there is a significant untapped opportunity to engage participation in the development of small, distributed generation projects. The current one-size-fits-all RFP model will not take full advantage of the opportunities for new generation, especially those for new generation added at the distribution level, and the associated benefits. While the opportunity is there, it is critical to remove the current barriers in the system and to create a level playing field.

2.1 THE OPPORTUNITY AT HAND

While small renewable energy projects certainly help the government meet broad objectives such as cleaner air and improved energy supply, they also offer a unique set of additional benefits to the province:

Improved Reliability and Stability of the Electricity System

Standard Offer Contracts will encourage more distributed generation across the province, closer to the load. This diversity in technologies as well as geographies will reinforce the stability of the system and reduce the vulnerability to centralized failures. A more distributed system also means reduced wear and strain on the transmission system, resulting in lower maintenance costs. It has been estimated that the system-related benefits of distributed generation are equivalent to approximately \$0.01/kWh.

Improved System Efficiency through Reduced Line Losses

By being closer to the load, the efficiency of the overall system improves as line losses are reduced. Given that the average line losses for the province are estimated at 9%, this can be a significant benefit to the overall system efficiency.

Avoidance of Transmission System Constraints for Faster Deployment

Since the Standard Offer Contracts will be focused on connecting to the distribution system, these projects will more likely not face the same challenges posed by larger projects dealing with costly and timely transmission bottlenecks. The result will be faster implementation of renewable energy.

Increased Rural Investment

Farmers, other rural landowners, community groups, co-operatives, First Nations, and rural businesses and industry could all potentially benefit from a steady supply of Standard Offer Contracts with sufficiently attractive prices that would drive investment in their local

communities. This investment would produce both direct and indirect spin-offs.

New Skilled Jobs

With the more stable market that Standard Offer Contracts provides, manufacturers are more inclined to establish production and operations facilities. Unions, skilled and unskilled labour, and recent university graduates could benefit from introduction of new manufacturing and service activity by companies supplying the wind turbines, hydro-electric generators, and photovoltaic panels needed to meet the demand created by Standard Offer Contracts. Denmark, Germany, and Spain have used renewable energy as a major engine for job creation.

Cleaner Air

The incremental generation from community-scale renewable energy will further displace fossil fuel sources and contribute to the province's ability to close coal-fired plants as part of its commitment to improve the quality of air in Ontario.

Greater Public Acceptance of Renewable Energy

Experience has shown that community involvement in smaller distributed projects ultimately leads to greater awareness, education and acceptance of these new technologies. This not only lessens the "NIMBY" factor for smaller projects, but helps to pave the way for all projects.

Increased Sources of Capital

By their very nature, community-scale projects will tap into local community capital to finance development. Whether it is equity provided by farmers, co-operatives or small businesses, or debt provided by local banks, credit unions and farm financing agencies, the pool of available capital for renewable energy is significantly expanded.

Increased Tax Revenue

Increased economic activity in rural areas would generate incremental tax revenues.

Policy Flexibility in Reaching (or Exceeding) Renewable Goals

The Ministry of Energy would benefit by the addition of another policy tool that can be used alongside existing policy options, such as the tendering system, to meet the goal of closing the province's coal-fired power plants, and reducing the need for electricity imports. Standard Offer Contracts can provide incremental generating capacity, either to serve as a buffer in the event that certain larger projects are delayed or stopped, or to help surpass the targets.

The province's RFP process has inherent risks in meeting objectives. Experience elsewhere indicates that only a percentage of winning bidders in tendering systems actually build projects. In some cases, such as Great Britain and France, the percentage of contracts executed is a fraction of those awarded. In France's Eole program, of the 300 MW in contracts awarded only 70 MW were built. And of those

only 30 MW are still operating under the original contracts. This was an important reason why France switched from a tendering system to a system of Standard Offer Contracts.

By not engaging the rural business sector in providing new supply, the province may be losing financial, transmission, and system reliability benefits, as well as indirect economic and social benefits associated with local manufacturing, local job creation, local business development and local acceptance.

2.2 BARRIERS TO PARTICIPATION IN MEETING SUPPLY

While all these benefits can accrue to the province from smaller scale projects, the current renewable energy process presents significant barriers. Individuals, community groups, farmers, co-operatives, small businesses and First Nations were unable to bid into the Ministry's recent RFP. The legal, financial, and interconnection requirements of the RFP were too onerous for them to participate.

In addition, the process did not recognize the system benefits of reduced line losses and transmission life extension provided by distribution-connected projects. Small projects cost more, but they are *worth more* to the system. A procurement process must recognize the system benefits in its decision criteria. Best price is not always best value.

Investment Requirements

Renewable power projects demand significant investments in up-front expenses for project planning, resource assessments, and planning approvals. These costs are prohibitive for farmers, community groups, and First Nations, notably so when there is little assurance of winning a contract once the expenditure has been made. The process, by and large, favoured larger corporations with significant financial resources.

Uncertainty for Investors

Uncertainty also proved a barrier. Only a few bidders win contracts in tendering systems, which act, in essence, as a lottery. Many will not win. Investment and initiative thrive best when there is some certainty that the initiator will at least have the opportunity to prove themselves in the marketplace if they invest substantial sums in up-front development expenses.

"Lowest-Price" Criteria

The RFP, by its emphasis on price and price alone, discriminated against smaller projects. In a competitive bidding process, larger projects in the 50-100 MW range could outbid smaller projects on price, even though these smaller projects can offer other important financial and non-financial benefits. The price-only approach also precluded more expensive renewable technologies such as solar photovoltaics from bidding. The costs of solar photovoltaics are an order of magnitude greater than those for wind energy or hydro-

electric power, yet they can play a useful role in the renewable energy equation.

Burdensome Program Administration

Overhead expenses of the tendering systems are also borne by the province, and these costs should ultimately be reflected in the cost of electricity.

The complex process for managing the recent RFP consumed significant resources within the Ministry, including extensive use of outside consultants. This process obviously has a direct financial impact. Multiple tranches of tenders will continue to tax the resources of the Ministry.

Administration of standard offer systems has historically been less burdensome to the taxpayer than tendering systems. Simplified contracting using standardized contracts and fixed-prices streamline the contracting process and introduce more vibrant competition than the RFP process alone, where only large, sophisticated firms can participate.

Furthermore, an RFP system for smaller projects would result in a disproportionate use of Ministry resources to administer the process. So while the additional expense may be justifiable for larger projects, it does not make sense for smaller scale projects.

3. STUDY METHODOLOGY

In developing the recommended pilot program, OSEA undertook a series of actions to ensure the program reflected the most up-to-date and leading edge practices in the industry from around the world.

3.1 RESEARCH ON SUCCESSFUL PROGRAMS WORLDWIDE

OSEA has investigated the various policy mechanisms utilized for the development of renewable energy around the world. While in North America the tendency has been to competitive tendering processes and quotas such as Renewable Portfolio Standards, the research has clearly demonstrated that **worldwide, Standard Offer Contracts are the most prevalent and successful mechanism in stimulating distributed renewable energy.**

Specific examples of the countries using this mechanism and the key design elements are discussed in the *Background on Standard Offers* section.

3.2 COORDINATION WITH STAKEHOLDER GROUPS

OSEA has coordinated its standard offer contract design with specialists in renewable energy technologies and has sought input from other NGOs working in the field of energy policy. OSEA received responses on its request for comments on proposed Standard Offer Contracts from some twenty individuals, firms, and NGOs in Canada,

the United States, and Europe. A detailed list of these participants is included in Appendix B.

This ensured the incorporation of a wide range of perspectives on the role and design of the program, and facilitated healthy debate on the various considerations that needed to be addressed.

3.3 DETAILED DESIGN WORKSHOP

A key step in the process development was a Detailed Design Workshop that OSEA organized on January 10-11, 2005.

Bernard Chabot, an internationally-renowned renewable energy economist with France's national energy management agency, ADEME (Agence de l'Environnement et de la Maîtrise de l'Énergie), lent his considerable experience and expertise to the proceedings. Mr. Chabot has been a leader in the design of Standard Offer Contracts in France and has worked with numerous other European jurisdictions in the design of similar programs. His experience was invaluable in addressing the wide range of practical implementation topics and to the effective financial modeling for price design.

Over 24 participants attended the workshop, including representatives from the renewable energy industry, provincial and national NGOs, and business leaders.

4. BACKGROUND ON STANDARD OFFER CONTRACTS

The following section outlines the key elements of Standard Offer Contracts including related terminology, the success of this mechanism worldwide, key principles for use and a survey of prices under these programs in various jurisdictions.

4.1 TERMINOLOGY

Standard offer contracts are known by many names: Renewable Energy Tariffs, Renewable Energy Feed-In Tariffs (REFITs), Feed Laws, Minimum Price Standards, Minimum Price Systems, Fixed Price Systems, Standard Offer Contracts, Renewable Energy Premiums, and Renewable Energy Bonus Payments.

Standard offer contracts as used in Europe are the single most successful mechanism for stimulating the rapid development of renewable energy technology. Equally important, Standard Offer Contracts are the most egalitarian method for determining where, when, and how much renewable energy capacity will be installed by enabling farmers, co-operatives, and First Nations to participate on an equal footing with large commercial developers.

Tariffs are the term commonly used in electric utility rate making in North America to describe the price paid for electricity per kilowatt-hour consumed. The term is also commonly used in Europe.

Standard Offer Contracts in Germany and France are identified as Advanced Renewable Tariffs. In this usage, tariffs describe the price paid per kilowatt-hour for electricity generated by renewable sources.

In Germany, France, and Spain, Advanced Renewable Tariffs permit the interconnection of renewable sources of electricity with the electric-utility network and at the same time specify how much the renewable generator is to be paid for their electricity.

These Standard Offer Contracts or Advanced Renewable Tariffs (ARTs) are the modern version of **Electricity Feed Laws** that were developed in northern Europe in the late 1980s and early 1990s. ARTs differ from feed laws in several important ways. Feed laws set the price paid for renewable energy as a simple percentage of the retail tariff. For example, the German feed law stipulated that renewable sources of energy would be paid 90% of the retail rate. ARTs, on the other hand, are more sophisticated than feed laws and can be tailored to different renewable technologies and to different regions of a country. There are often several tiers or sets of prices per kWh depending upon the technology, the resource available, and how long the generator has been in service.

4.2 STANDARD OFFER CONTRACTS IN EUROPE, NORTH AMERICA AND BEYOND

Worldwide, the trend is growing toward Standard Offer Contracts because of their success at bringing large amounts of renewable generating capacity on line quickly at reasonable costs.

Europe: A History of Success

Denmark, Germany, and Spain accounted for nearly two-thirds of all the wind generating capacity in the world at the end of 2004. All three countries have had or now use Standard Offer Contracts. As a result of steady domestic market created by these Standard Offer Contracts, each has a dynamic wind turbine manufacturing sector (see Figure 1: Standard Offer Contracts Status)

Germany alone accounts for one-third of total worldwide wind generation. The 16,600 MW of wind turbines operating in Germany at the end of 2004 was 2.3 times the total installed wind capacity of North America.

Ranked second worldwide behind Germany, Spanish wind development reached 8,000 MW at the end of 2004, more than 1,000 MW greater than in all of North America.

Like Germany, and Denmark before it, Spain’s rapid development of renewable energy is due to its adoption of Standard Offer Contracts

STANDARD OFFER CONTRACTS STATUS	
EXISTING	PROPOSED
Germany	Turkey (Wind)
France	Czech Republic
Spain	China
The Netherlands	India
Portugal	California (PV)
Austria	Italy (PV)
Brazil	PEI, Canada?
Greece	Ontario, Canada?
Luxembourg	Minnesota, USA?

Figure 1:
Standard Offer Contracts Status

in the mid 1990s. The Spanish tariff system was updated in early 2004 and now includes more renewable technologies, and more categories within each technology.

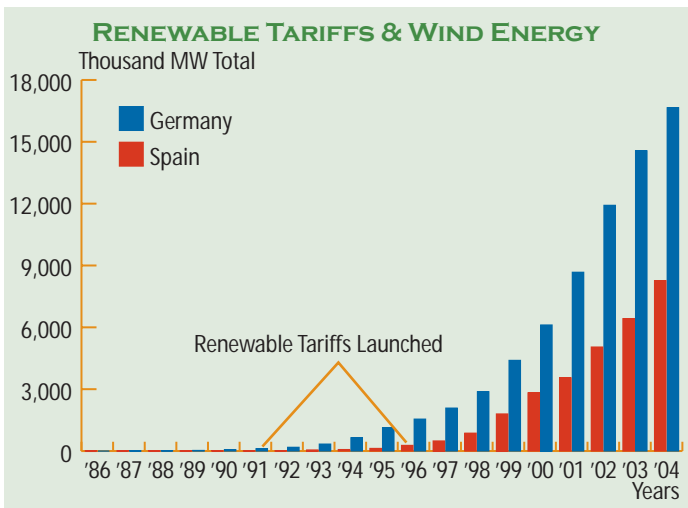


Figure 2:
Growth of Wind Energy in Europe due to Standard Offer Contracts or Renewable Energy Tariffs.

Standard Offer Contracts, especially in Europe, have been used to spur development of solar photovoltaics, biomass, and small hydro (see Figure 3: Growth of Solar Photovoltaics in Germany).

By the end of 2004, Germans were operating a total of 110,000 solar-electric systems, representing about 700 MW. Most of these installations are owned by individuals and small businesses and are capable of generating more than one-half billion kWh per year under German conditions. Because there is one-quarter more sunlight in Ontario than in Germany, the same number of solar panels would

generate nearly 680 million kWh in the Canadian province. The German ministry for the environment reports that by the end of 2005 there will be some 15,000 people working in the rapidly growing solar industry.

Renewable energy technologies installed under Germany's standard offer contract system now generate 30 TWh annually, supplying 5% of the country's electricity. Placed in southern Ontario, Germany's renewable power plants would today produce 20% of the province's electricity. Nearly all of this technology has been installed since 1991 when the Standard Offer Contracts were first introduced.

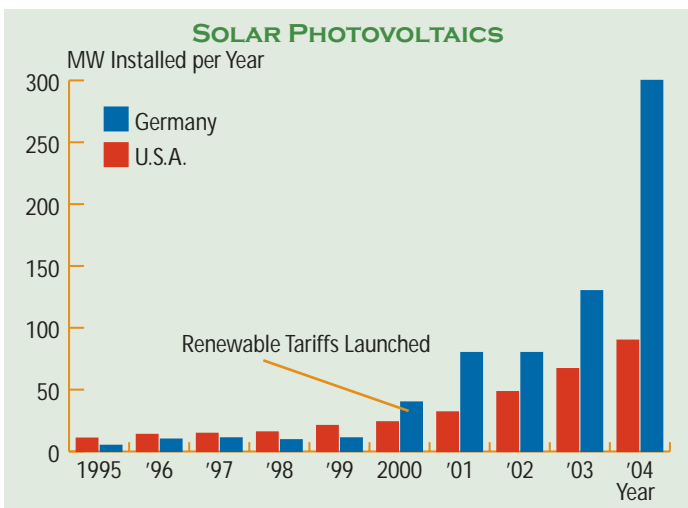


Figure 3:
Growth of Solar Photovoltaics in Germany

Because Germany's program is open ended, there is a stable and growing market for renewable technology. This has spurred employment in all technologies, not just in solar photovoltaics. There are 45,000 employed in the wind industry alone. Altogether, there are 135,000 people working in Germany's renewable energy sector.

Standard Offer Contracts in North America

Standard Offer Contracts for renewable power development were first introduced in California in the mid-1980's in response to obstruc-

tionist behaviour by the state's Investor-Owned Utilities toward small power producers. California's Public Utility Commission ordered the utilities to offer standardized contracts in co-ordination with small renewable power producers. One such contract, Standard Offer No. 4 (SO4) provided a schedule of fixed-prices. Within a few years, private power producers had installed 1,200 MW of wind turbines.

Currently, Minnesota, California, and Prince Edward Island are also considering some form of Standard Offer Contracts.

Trends in Emerging Markets

In Asia, China's Peoples' Congress will this year consider introducing a standard offer contract system like those in Europe. India's wind industry (the world's fourth largest outside Germany, Denmark, and Spain) has abandoned its bid for new tax credits and has chosen to support a call for Standard Offer Contracts.

5. PRINCIPLES OF STANDARD OFFER CONTRACTS

A number of key principles are essential to the effective functioning of a Standard Offer Contract System. As a system, it is critical to ensure that these elements are integrated in the program design. The absence of one or more of these principles will render the over-all process ineffective.

Sufficient Contract Length, Reliability and Stability

Above all else, a system of Standard Offer Contracts must provide a stable market for investment. The pilot program envisioned here must be sufficiently long to assure the investment community and manufacturers that there will be a stable and ongoing market for their products. To provide the necessary program stability, contracts, once awarded, must not be revisited unless to improve terms or conditions, never to reduce payments or add additional burdens or requirements. Unfortunately, the previous turmoil in the Ontario market due to political interventions has shaken the confidence in the stability of the market for manufacturers and investors.

Stable Prices

Prices under Standard Offer Contracts must be stable and predictable. Farmers, community groups, First Nations, co-operatives and the local lenders who are likely to support them cannot take the risk of betting on a fluctuating market. Prices must be fixed, preferably indexed to inflation, and bankable.

Sufficient Pricing Levels

To function effectively, Standard Offer Contracts must provide minimum profitability at sites with moderate resources to stimulate strong market growth while at the same time not generating undue profits at sites with energetic resources. For example, with wind

CHINA'S PROPOSED STANDARD OFFER CONTRACTS

China's Peoples Congress is currently considering Standard Offer Contracts modeled after those in Europe. In reviewing the proposed law, Ryan Wisser of Lawrence Berkeley National Laboratory, made several observations that illustrate the essential features of successful programs. Wisser, an authority on market mechanisms for developing renewable energy, suggested that:

- there should be a fixed-term, based on differential prices for various technologies,
- the price and duration of the tariff should be sufficient to attract investment and result in increased renewable energy development, by offering a profitable return to renewable energy developers and project owners,
- the price should be known in advance by developers, and should be durable and stable,
- contract terms should have a minimum of 15 years,
- reductions in the price or changes to the policy should only be made prospectively for new contracts and not retroactively affecting existing contracts,
- programs require Standard Power Purchase Agreements (PPA) and Contract Terms,
- that a well-designed feed-in tariff will automatically lead to rapid renewable energy deployment by providing profitability to renewable generators and ensuring that the grid operator purchases renewable power.

If renewable electricity targets are not being achieved under the initial program, prices can be raised or other details improved to stimulate further development. Likewise, prices can be adjusted downward if it is felt there is a need to adjust the pace of development.

energy, contract prices should be adjusted on the basis of the annual specific yield (kWh/m²/yr) as is the case in Germany and France.

Simple, Streamlined Contracts

Equally important, the process for applying for and awarding contracts must be simple and timely. Contracts must also be available for several technologies: wind, small hydro, various forms of biomass generation and solar.

Simple, Streamlined Interconnection with the Grid

The process for these projects to interconnect must be simple, streamlined and assured.

The proposed pilot program should provide:

- Simple, comprehensible, and transparent contracts,
- Simplified interconnection,
- Sufficient price per kilowatt-hour to drive development,
- Contract length sufficient to drive development,
- Prices differentiated by technology, and
- Prices differentiated by available resource where applicable.

Costs Shared By Electricity Consumers

The premium prices paid under Standard Offer Contracts must not come from taxes. Not only are tax credits or other subsidies subject to periodic budgetary debates, they distort the electricity market. By passing the cost of the premiums onto taxpayers, the true cost of electricity is hidden from the consumer. For this reason, all jurisdictions successfully using Standard Offer Contracts spread the cost of the premium payments across all electricity consumers and specifically avoid passing the costs to taxpayers.

6. AVAILABLE PRICING POLICY OPTIONS

There are several pricing options for Standard Offer Contracts available to the province. In general, there are two main avenues that can be considered – a variable pricing approach based on relevant benchmarks, or a fixed price model. The relative merits and issues with these options are discussed below, with relevant examples from various jurisdictions.

6.1 VARIABLE PRICING MODELS

Those models incorporating the spot market price, or the variable price of power purchased from outside the province, are the antithesis of the fixed-price contracts that are at the heart of the pilot program for small renewable power producers. Nevertheless, the spot market has been discussed as one means for setting the price of renewable energy and so is included here. There are a number of variations with this approach.

Spot Market or Wholesale Price

In this option, the price the renewable developer would receive is the current spot market price.

Issues:

- The current spot market price is insufficient to drive renewable development. The spot market price in 2004 was less than the average bid price of the renewable energy RFP.
- The proxy power plants on the spot market are coal-fired. The province's renewable energy development program is predicated on the policy of closing the coal plants and it would be ironic if the province closed the coal plants in Ontario only to use power from coal plants in the United States as proxies for the price of renewable power in Ontario.

Spot Market with Premium

The contracted price paid under Standard Offer Contracts could be determined by the spot market price per kWh plus a premium per kWh. The cost of premiums could be placed in the rate base of Ontario electricity consumers or the premium could be paid from the provincial budget.

Issues:

- Paying a premium through the budget process creates uncertainty and distorts electricity pricing by placing a portion of generating costs on the taxpayer, not the electricity consumer.
- Because of the variability in the spot market price, the premium must be higher than it would be otherwise to compensate for the uncertainty in the spot market price. The administrative effort needed to determine the necessary premium payment would be more fruitfully used to determine an appropriate price for fixed-price contracts.
- Prices must be sufficient to drive development without reliance on tradable credits or special pricing schemes that are subject to the whims of the public and the marketplace.
- Variable pricing does not provide a stable, predictable income stream that is sufficiently reliable so lenders will provide the debt needed to build capital-intensive projects such as wind, solar photovoltaics, and hydro plants. The result is that projects will require more equity, and less debt, and total prices offered will therefore need to be higher.

Spot Market Price with Tax Credit or Capital Subsidies

In this approach, the spot price would be supplemented with a tax credit or capital subsidies to try and provide the economic equation that would stimulate development.

Issues:

- As in the spot market price plus premium mentioned above, tax credits or capital subsidies would need regular appropriations or parliamentary action.

- Depending upon program design, tax credits may distort the investment market and discriminate against the very investors that the pilot program seeks to enfranchise: farmers, co-operatives, First Nations, or start-up firms with limited tax liability. The U.S. Production Tax Credit for wind energy has just this effect, precluding participation and favouring companies with large tax liabilities.
- Capital subsidies in dollars per kilowatt of installed capacity have historically been counterproductive in developing a dynamic and sustainable wind turbine manufacturing sector. However, they have been used with some effect in Japan and California in promoting solar photovoltaics with net metering. Paying for kWh encourages good performance.

Avoided Cost Pricing

Similarly, the province could determine the avoided cost of new power plants within the province and use this as a proxy for renewable energy.

Issues:

- As evidenced in the United States during the past two decades this strategy is problematic and requires lengthy analysis of the costs of generation from other sources, notably nuclear power, through costly administrative or quasi-judicial proceedings.
- In the end such proceedings only determine what the estimated costs are of plants avoided and not built rather than the cost of the power plants desired.
- If the objective is to spur renewable energy development, administrative time and money would be better spent identifying the prices that would drive renewable development in the province – which is the direction of the proposed pilot program.

Avoided Cost Pricing with Premium

This approach still requires the cumbersome determination of avoided cost, along with the establishment of a premium to make investment in renewable energy attractive.

Variations of this approach are in use in Minnesota, the Netherlands and California (for solar).

Minnesota

Minnesota uses this approach for its community wind contracts within the Xcel franchise. Bonus or premium payments are a per kWh subsidy appropriated in the state budget process.

Program Details:

- Approximately 160 MW have been installed under this program or 11 times the total installed wind capacity of Ontario.

- When the existing program is completed, some 200 MW of commercial wind generation will be in operating in Minnesota, all owned or partially owned by Minnesota farmers. This is two-thirds of Ontario's expected wind capacity in 2007 if all the contracts awarded are built.
- Currently, Minnesota's standard offer contract is only available through Xcel, the largest electric utility in the state.
- Xcel's Standard Offer Contracts run for twenty years.
- The program is limited to wind energy and targeted specifically at farmers.
- Minnesota also offers a small wind project incentive payment of US\$0.015/kWh. The incentive is paid for ten years.
- Funds for the program are periodically appropriated by the state assembly and are part of the state's budgetary process.
- The program was initially limited to 100 MW, and project size was capped at 2 MW. After the first 100 MW was reached the limit was increased by another 100 MW.

Issues:

Minnesota's incentive payment program is being reconsidered this legislative session for several reasons:

- Its dependence on the state budget process breeds uncertainty. The state legislature is revisiting the small wind program because of budget shortfalls.
- Its project size limit (2MW) is too low for modern wind turbines.
- The program is limited only to wind energy.
- Importantly, the premium payment coupled with Xcel's fixed-tariff are insufficient to drive development without the \$.018/kWh Federal Production Tax Credit. Thus, development follows the boom and bust cycles resulting from the federal tax program.

Netherlands

After many years with Standard Offer Contracts, the Netherlands recently introduced a program similar to Minnesota's. Whereas the Minnesota premium is limited to wind projects less than 2 MW, the Dutch premium is tailored to several different technologies.

Issues:

- The Dutch program has two fundamental flaws: premium payments are paid from a fund and not placed directly into the rate base, and the number of years the premium will be paid is determined, in the case of wind energy, by capacity factor. This has led to distortions in the market for wind turbines. As a result the Dutch are re-examining the German-French model of Standard Offer Contracts.

California

In California, funds for solar photovoltaic premiums are raised from electricity consumers through a Systems Benefits Charge.

Issues:

- Disbursement is the purview of the state assembly. Thus, the pool of funds is limited, not open ended, and the assembly periodically debates whether to continue disbursing the funds.
- This uncertainty has led to a boom and bust cycle in California's PV industry not unlike the boom and bust in the United States' wind industry as a result of the on-again, off-again Production Tax Credit.

Summary of Variable-Pricing Models

OSEA Recommendation

Empirical evidence strongly suggests that variable-pricing models should not be used.

Rationale

In summary, the variable-pricing models entail significant complications and shortcomings that would prevent the program from achieving clear objectives. In particular, variable priced models have the following issues:

- Benchmarks such as the spot market or avoided costs are not relevant for the Ontario market; spot is currently based on coal, which is to be phased out and avoided cost requires costly studies to produce theoretical estimates of the avoided costs, rather than the actual costs of desired new generation. These benchmarks do not reflect the true cost of new renewable electricity.
- Benchmarks such as the spot market are lower than the recent RFP, and are therefore insufficient to allow investment.
- Variable pricing does not provide a stable, predictable income stream that is sufficiently reliable that lenders will provide the debt needed to build capital-intensive projects.
- Tax credits or premium subsidies would need regular appropriations or parliamentary action, and so are ineffective for long-term contracts required.
- Furthermore, premiums or tax credits are often secured from legislative budgets, and not placed directly into the rate base. This puts the burden on the taxpayer rather than the ratepayer.
- Most tax credits/subsidies for capital-intensive projects like wind, small hydro, and biomass are typically not accessible/useful to the average citizen looking to invest in their local renewable energy project; they tend to favour high net worth investors (however, they can potentially be relevant for smaller solar applications).

6.2 FIXED-PRICE CONTRACTS IN THE RATE BASE

Fixed-price contracts, that is, contracts that do not vary with the spot market price or respond to fuel-price volatility, are the other key avenue for arriving at prices for renewable energy.

These provide the greatest stability for all interested parties: project developers, lenders, suppliers, the provincial government, and ratepayers. Fixed-price contracts provide the certainty needed for developers and lenders to accurately forecast cash flow and therefore make favourable investment decisions.

The simplest and most straightforward strategy for paying the cost of fixed-price contracts under the pilot program is to place the cost in the rate base (as will be done for the winning contracts under the renewable energy RFP). By doing so there is no need to continually monitor the funds being collected by Systems Benefits Charges or other means and match these funds with the pilot program's payments.

A number of fixed-price or minimum-price models in use are discussed below.

European Union

Sixteen of the 25 countries that are members of the European Union use some form of Standard Offer Contracts. Some 84% of all renewable energy capacity in the EU was installed in Germany, Spain, and Denmark as a result of Standard Offer Contracts providing minimum prices. Details vary from one country to the next. Programs in most of these countries exhibit the key traits of a fixed-price or Standard Offer Contracts: purchase power agreements (PPAs) or Standard Offer Contracts open to all parties, and guaranteed prices for a specific period of time. However, those countries with the greatest success at developing renewable energy have all incorporated the cost of the premium prices into the rate base. Portugal is credited as the first EU member state to implement a minimum price system using Standard Offer Contracts in 1988. Germany followed in 1991 with its electricity Feed-In law.

Germany

The best example of successful implementation of minimum price, Standard Offer Contracts has been in Germany. Since 1991 Germany has seen a steady increase in the penetration of renewable energy, mostly wind energy, but also small hydro, biomass and solar photovoltaics. Previously, costs of the German system were borne by electricity ratepayers in the regions where the renewable generator was located. This was believed to place an undue burden on those living in windy regions of the country and the law was changed in 2000. The new Renewable Energy Sources Act spread the cost of the renewable energy premium over all ratepayers in the country. This is

seen as a more equitable distribution of the costs since all German society benefits from the environmental attributes that renewable energy bring to the country. The new law also provided a “hardship” clause for energy intensive industries to opt out of paying the slight increase in electricity rates due to the program. Few industries have exercised this option to date.

Spain

Spain followed the German example in 1994 with a royal decree and has consistently supported its renewable energy development policy since then. The Spanish program is seen as part of a regional economic development initiative as well as a means for increasing renewable supply. As in the new German program, costs of the premium payments are spread across all electricity consumers.

France

France followed the new German model after experimenting with a tendering system that failed to produce the contracted capacity. The French adapted the German model to French conditions but did not incorporate the same number of technologies as that in Germany. As in Germany, costs of the program are paid by all ratepayers in France and not paid from tax revenues. Following introduction of the French system of Standard Offer Contracts, there was rapid increase in the number of applications for building permits. In the few years since the program has been in place, installations have exceeded total operating capacity of renewable energy developed under the previous tendering system.

Minnesota

The situation in Minnesota offers an interesting look into experience with variable priced versus fixed price contracts. Like Ontario, Minnesota has considered several policy proposals for fostering community wind development. Unlike Ontario, Minnesota has multi-year experience with its existing small development incentive. In North America, Minnesota is the only jurisdiction with experience using a standard offer contract for small renewable power projects since California’s SO4 contracts of the 1980s.

Nevertheless, as discussed in the previous section on Variable-Priced mechanisms, there are significant issues with the current policies in Minnesota. As a result, Minnesota is now considering a number of fixed-price approaches.

Minnesota has an active and effective public interest community—the nearly 600 MW of wind development in the south-western corner of the state is due directly to intervention by state NGOs. In concert with farm groups and state legislators from farm districts they have proposed several new strategies for fostering community wind development:

Option 1: Minnesota Premium Payment

- NGOs have proposed 1,500 MW of community wind capacity over ten years, through a premium payment of \$0.023 CAD/kWh in addition to a fixed tariff representing the avoided cost.
- As in the current program the incentive would be limited to projects up to 2 MW, but would now include single wind turbines greater than 2 MW.
- The program would be limited to Minnesota non-profits, non-taxable entities (municipalities), residents, businesses, or some combination.
- To ensure broad distribution of the benefits of this program, no single investor in a for-profit project would be allowed more than a 49% financial interest in a given project, and no 10 investors could collectively own more than 90% of any one project. Projects may be aggregated.
- The incentive payment would be limited to ten years and would be paid for through a Systems Benefits Charge on all ratepayers.
- The proposed cap was set high to avoid the hoarding of contracts that plagued the small wind program when it was first introduced.

Issues:

- Such a premium is only useful if the fixed-price contract is sufficiently high that the combination can drive development.
- Again, this premium is solely targeted at wind energy and does not include other renewable energy technologies.
- The ten-year contract length may be insufficient to ensure that farmers and community groups have an adequate return on investment during the 20-year life of a wind turbine.

Option 2: Minnesota Tax Credit

- The NGO community envisions a state wind energy tax credit for individuals, non-profits, school districts, and rural utilities.
- The premium payment and terms are similar to those of the previous example.
- Individuals would be eligible to make use of these tax credits in proportion to their ownership stake in the project with a cap of \$4,400 per Minnesota taxpayer per year.
- Limits on program participation are similar to those for the premium payment.
- Creating a state tax credit circumvents the problems associated with the Federal Production Tax Credit which benefits only large institutions that have a high enough tax liability to use the credits.

Option 3: Minnesota Community Wind Tariff

The proposal gaining the most interest is a “Community Wind Tariff.”

- A fixed price would apply to all load-serving entities (utility companies) in the state, not just the Xcel franchise.
- There are several complex provisions to adapt the tariff to the availability of the Federal Production Tax Credit, e.g. reducing the tariff if the user can take advantage of the tax credits, increasing it if they cannot.
- Another proposed variation is to fix the tariff as a percentage of retail prices. The tariffs would apply to all load-serving entities until such time as they fulfill their renewable energy obligations under the Minnesota Renewable Energy Objective.

Though the situation is fluid, there seems to be a preference among the NGO community and the Minnesota Department of Commerce’s Energy Office to support a Community-Based Energy Development (C-BED) tariff with fixed-prices and standard contract terms.

Summary of Fixed-Price Models

OSEA Recommendation

Given the structure and needs of the Ontario market, it is recommended that the province employ fixed-price contracts for the Standard Offer Contracts pilot program.

Rationale

- Experience shows that the markets that have had the greatest growth in community-scale renewable energy have been those that have used fixed-price models.
- Fixed-price contracts provide developers with the certainty of revenues and cash flows required to justify investment. This is particularly important for community-scale projects, where the funds are likely coming from average citizens and farmers who cannot afford the risk of variable-pricing.
- This approach is consistent with the recent RFP process; for all intents and purposes, the successful bidders received fixed-price contracts (with a small portion adjusted for inflation).
- As with the projects in the recent RFP, the ability to secure financing is critical. Fixed-price contracts provide the reliability and stability that is necessary for lenders.
- The province has been emphasizing the importance of the true cost of electricity to the market; fixed-price contracts are designed to be reflective of the true cost of new renewable electricity generation.
- Fixed-price contracts, as envisioned by OSEA, will be placed in the ratepayer base, which is the most appropriate approach. In this way it does not burden the provincial budget or the taxpayer.

6.3 STANDARD OFFER PRICES IN EUROPE & NORTH AMERICA

The alternative pricing policies for Standard Offer Contracts vary around the world, in part due to the model in use, and in part due to the current energy, environment and costs. In all cases, however, the pricing for successful systems is sufficient to offer a reasonable expectation of profit and to attract investors.

Typical first-year prices for wind energy range from a low in Minnesota of \$0.06 CAD/kWh to a high of \$0.16 CAD/kWh in Portugal. These prices compare favourably to the total price for wind energy under Britain’s Renewable Obligation Certificate trading system of about \$0.14 CAD/kWh and much lower than the prices being paid in Italy under its ROC trading system of nearly \$0.18 CAD/kWh (see Figure 4. First Year Fixed-Price Renewable Tariffs in \$CAD/kWh).

FIRST YEAR FIXED-PRICE RENEWABLE TARIFFS (IN \$CAD/KWH)				
COUNTRY	WIND	PHOTOVOLTAICS	HYDRO	BIOMASS
Austria	\$0.125			
California (proposed)		\$0.667		
Czech Republic (proposed)				
Brazil	\$0.095		\$0.058	\$0.063
France <12 MW	\$0.135	\$0.245		
Germany	\$0.140	\$0.923	\$0.123	\$0.185
Italy (proposed)		\$0.804		
Minnesota*	\$0.057			
Spain <50 MW	\$0.106	\$0.676	\$0.106	\$0.106
Portugal	\$0.161	\$0.458	\$0.132	

*Xcel Fixed-price tariff plus Small Wind Project premium.

Figure 4:
First Year Fixed-Price Renewable Tariffs in \$CAD/kWh.

7. PILOT PROGRAM OBJECTIVES

Based on the discussions with the Ministry of Energy and the various stakeholders in the process, the objectives for the proposed pilot program are:

- 1. Broad participation** – The program should lower the barriers to entry to enable farmers, community groups, First Nations, co-operatives, rural businesses and industry, and others to profitably build small (up to ≈ 10 MW) renewable power projects to serve Ontario’s power needs.
- 2. Stable market** – The pilot program should provide a stable market to allow steady development of the renewable energy industry in the province and attract renewable energy technology manufacturing.
- 3. Replicability for Other Renewable Electricity Technologies** – Most experience with Standard Offer Contracts have been with wind energy and photovoltaics. However, the policy chosen should work equally well with other sources of renewably-generated electricity, such as that biogas or biomass plants, or that from small hydro plants (as it has worked in leading countries such as Germany).
- 4. Simple, streamlined cost-effective process** – The process should facilitate project development by streamlining the issuance of contracts and interconnection agreements. The Standard Offer Contracts through the pilot program should cut transaction costs dramatically for both participants and the province over those used previously with the tendering system.

8. ELIGIBLE RENEWABLE TECHNOLOGIES FOR PILOT PROGRAM

The scope of renewable technologies to be included in the program is a key component of the pilot design.

OSEA Recommendation

The pilot program should offer standard contracts with differential pricing for four technologies:



Rationale

- Ontario is capable of generating renewable energy from a range of technologies, and so it is beneficial to take advantage of all technologies.
- This is also prudent in terms of building supply diversity into the system.
- The effectiveness and benefits of the pilot will be enhanced based on greater learning across all technologies by deriving field experience with a host of technologies, not just wind energy.

9. ELIGIBLE PARTICIPANTS IN THE PILOT PROGRAM

The Ministry of Energy asked OSEA to propose a pilot program for community wind power development. Therefore, it is important to define the type of organizations eligible to participate in the pilot.

OSEA Recommendation

The pilot program should be inclusive, not exclusive. OSEA's definition of "community" is therefore expansive and includes farmers and rural landowners, community-based organizations, co-operatives, First Nations, NGOs, municipal entities, private individuals, small businesses and combinations thereof.

Furthermore, OSEA recommends that the "Orphaned" renewable generators — the existing small wind projects that were unable to participate in the recent RFP—be 'grandfathered' into the Standard Offer Contracts pilot program.

Rationale

- One of the pilot program's goals is to enable as broad participation as possible to unleash the full creativity of Ontario's people in meeting their needs for renewable sources of generation. A more inclusive approach will bring diverse players and strengthen the success of the pilot program.
- No program can anticipate all the possible combinations of private individuals, businesses, municipalities, NGOs and community groups that might arise from the availability of Standard Offer Contracts. Thus, the pilot program should be open to all participants.
- Maximum project size will effectively become a proxy for community-based, locally-owned, or distributed generation.
- OSEA's definition does not preclude profit-making enterprises. In fact, OSEA encourages for-profit ventures as this can stimulate community or local ownership of renewable power generation.



A partnership between a co-op and a municipality made this pioneering effort a success.

- These projects will likely come in many shapes and sizes, but are unified by having some level of local or public involvement, equity, initiation, and control. Examples include: school-owned wind turbines, farmer-owned wind co-operatives, Limited Liability Corporations (LLCs), and local public power (municipally owned in whole or part) wind projects.
- With respect to the 'Orphans', these projects were pioneers in renewable energy and made investments based on the government direction regarding the electricity marketplace at the time. The reversal by the government at the time left these projects without a marketplace for their power. Their viability was further compromised by not being allowed to participate in the recent RFP. It is imperative that the government redress this situation to demonstrate market integrity.
- The 'Orphan' projects are all of the scale being proposed for this pilot, so this is the logical and appropriate category for them; it is not reasonable to expect them to bid into the RFP against much larger projects using newer technology.

10. PILOT PROGRAM CONTRACT DESIGN

The scope and basic structure of the contracts for the pilot need to be defined.

OSEA Recommendation

- Price paid per kWh,
- How adjustments, if any, are made in the price,
- How often and when payments are issued,
- Length of the contract,
- Reporting requirements,
- Amount of time allowed from signing the contract and its activation,
- Consequences of not commencing operation within the time allotted,
- What happens when the term of the contract is reached,
- The process for dispute resolution,
- A periodic evaluation of how well the premiums are performing so the initiative remains on target.

Standard offer contracts must be simple, transparent and written in clear or what Donna Cansfield, MPP (Etobicoke-Centre), calls "Canadian Tire" language. Contracts need not be elaborate but need to state that the generator has the right to connect and be paid for their generation, and include:

Rationale

- To be as inclusive as possible, and accessible to all potential participants, it is essential that the contracts be comprehensive yet streamlined in nature.

- For these types of projects, a standardized, brief contract is the most appropriate and cost-effective approach. Extensive, complex legal documents would create undue burden and costs on potential participants and would consequently deter participation.
- Similarly, the cost for the province to administer contracts needs to be cost-effective and in proportion to the value of these types of projects.

11. PILOT PROGRAM STANDARD OFFER CONTRACT TERM

One of the most critical elements for success in the pilot is the contract term.

OSEA Recommendation

OSEA recommends 20-year contracts for the pilot projects.

There should also be some provision to allow extension of the contract at the end of the contract’s term or to allow switching the contract to the spot market price, average system price, or system avoided cost without a rate proceeding before the OPA or OEB.

Rationale

- To encourage investment, developers need reliable, long-term price commitments.
- With the prices proposed, 20-year contracts should allow sufficient time to amortize the investment and earn a reasonable rate of return on the invested capital as well as return sufficient benefits to provincial ratepayers.
- This proposed term is consistent with the term for contracts awarded under the recent renewable energy RFP, so there is alignment from a process perspective.

Most jurisdictions that have used Standard Offer Contracts like those in the pilot program have chosen 20-year terms. Early Danish and German Standard Offer Contracts were open ended, that is, there were no time limits on payments under the contract. California’s SO4 contracts were 20 to 30 years in length with most choosing 30-year contracts that included a 10-year fixed-price portion followed by 20 years with variable tariffs depending upon a determination of avoided cost. German contracts are for 20 years, French contracts for 15 years, and Spanish contracts include provisions for more than 25 years depending upon the technology and up to the full operating life of the renewable generator (see figure 5: Typical Contract Term in Years).

TYPICAL CONTRACT TERM FOR RENEWABLE TARIFFS (IN YEARS)				
COUNTRY	WIND	PV	HYDRO	BIOMASS
Austria	13			
California (proposed)		3		
Czech Republic (proposed)	15			
Brazil	20		20	20
France	15	15		
Germany	20	20	15-30	20
Italy (proposed)		29		
Minnesota*	20			
Spain	>15	>25	>25	>20
Portugal	12	12	12	

*Xcel Fixed-price

Figure 5:
Typical Contract Term
in Years

12. PILOT PROGRAM PROJECT SIZE LIMIT

The Ministry of Energy asked OSEA to consider the limit that should be implemented on the size of individual projects eligible for the pilot.

OSEA Recommendation

Based on the program objectives, OSEA recommends that:

- The pilot program is limited to distribution voltages of 44 kV or less and that projects are limited to approximately 10 MW.
- The 10 MW project size limit should include the last turbine in, that is, if the last turbine added pushes the total over 10 MW, it is included. Thus if there were five 1.8 MW turbines, the sixth could be added even though it would increase the project size to 10.8 MW. Similarly, if there were three 3 MW turbines the fourth turbine could be added, bringing the project total to 12 MW.
- The amount of capacity that qualifies under the pilot program will be determined at the point of interconnection. That is, each 10 MW project must have its own interconnection to qualify for the pilot program.
- The 10 MW limit should be revisited during the two-year review of the pilot program described later. This limit, and whether it is too low to capture all the benefits of distributed generation, can be one of the conditions specifically examined during the review.
- OSEA suggests the distribution voltage requirement for northern Ontario and First Nation communities be further investigated to ensure they are not unnecessarily excluded.

Rationale

Throughout 2004 OSEA proposed Standard Offer Contracts for projects less than 10 MW in size. For OSEA, this size acted as a surrogate for small, locally-directed wind projects that could take full advantage of the benefits that distributed renewable generation can provide. We believe this remains true today. Other considerations include:

- To maximize the benefits of distributed generation, projects must be connected to distribution voltages of 44 kV or less.
- The Independent Market Operator considers projects less than 10 MW embedded generation and doesn't need to register with the Independent Market Operator (IMO). Limiting project size to less than 10 MW also simplifies settlement procedures with Hydro One or Local Distribution Companies (LDCs).
- Nevertheless, a project size cap of 10 MW will restrict local developers with the capability of building projects of 20 MW or more and who have the acumen needed to apply for an IMO generator license. Public opinion surveys for Sustainable Energy Ireland, a state-funded agency, found that acceptance

of wind energy was greatest when projects were limited to clusters of no more than ten turbines. With today's 3MW wind turbines this is equivalent to projects of 30 MW.

- Further, a 10 MW limit may be too small to capture all distributed biomass technology and some hydro projects, but it will capture all solar photovoltaic projects.
- While an initial 10 MW project limit may be too low in light of today's multi-megawatt wind turbines and some hydro projects, the review period can allow for this to be revisited and remedied if necessary. However, the review should consider *only* whether the limit should be raised, not lowered. One of the objectives of the pilot program is to demonstrate a stable domestic market to the renewable energy industry (developers, lenders, and suppliers). For this objective to be met, suppliers need assurance that the program will not be reduced during the pilot period so that they can plan their investments in technology and human resources accordingly.

13. OVERALL PROJECT LIMITS FOR THE PILOT PROGRAM

Another aspect of the program design to be considered was the requirement for an overall program limit to the amount of renewable power contracted under the pilot program. There is a concern that an untested — at least in Ontario — pilot program might be far more successful than anticipated, resulting in an excessive amount of new renewable generation. The natural response to this concern is to set limits or caps on the program's ultimate size.

OSEA Recommendation

Self-Limiting: No Cap

OSEA believes that there must not be a cap for the pilot program. The very nature of these projects (less than 10 MW, on distribution feeders) is self-limiting, and so a cap is unnecessary.

Program Time Limit Cap

However, if the concern remains that the pilot program may result in excessive capacity and the province wishes to manage the pace of development, the province can do so very simply by limiting the pilot program's length. In this case, OSEA strongly recommends that the program be limited by a time period, rather than a cap of the power contracted.

It is suggested that the pilot program be established to expire in 2010 with discussions on renewal, extension, or changes to the pilot program to begin in 2009 to allow ample time for evaluating the program.

To clarify, the opportunity for new contracts under the pilot program would expire on this date, contracts implemented in 2010 would run a 20-year course if the contract term was determined to be 20 years.

Other Options Considered

1,000 MW Cap

- Limit total program size to about one-third of total renewable capacity planned under the government's commitments of 2,700 MW by 2007.
- This is roughly equivalent to 1,000 MW of nameplate capacity, possibly more if the lower capacity factor of renewable energy is fully taken into account.

400+ MW Cap

- Limit total program size to that already awarded in the first renewable RFP. This would be equitable to individuals and community groups as well as small developers who were prevented from participating in the first RFP.
- The cap would be lifted by an equivalent amount to reflect subsequent renewable RFPs.

Rationale

- The term of the pilot program must be long enough to allow ample opportunity for participation and for a meaningful amount of capacity to be installed to gauge the program's success.
- Whereas the previous prospects of market deregulation and subsequent announcement of RFPs provided large players of the private sector with signals to encourage investment in development activities, these signals have not been in place for community-scale projects. Appropriate time must be factored in to allow these projects to ramp up development. A minimum of five years would be necessary for this, setting the expiration of the program at year-end in 2010.
- The existing RFP process for larger projects was established to ensure the province meets their stated renewable energy targets. Since this is a pilot program, it is important to test and evaluate it outside the parameters of the primary program.
- Caps or artificial limits to program size invariably leads to gaming and a rush for contracts before the limits are reached.
- Caps lead to uncertainty among participants about the availability of contracts. One of the purposes of the pilot program is to provide certainty so that a broader and more representative cross section of Ontario's economy can participate in renewable energy development. Uncertainty regarding the availability of contracts inhibits project development because it becomes unclear if the up-front development expenses will be recovered with a contract.
- The proposed duration of the pilot is consistent with the overall provincial goals for renewable energy.

- While most existing standard offer contract programs are limited, Germany's is open-ended, that is, there is no limit on the amount of renewable energy that can be built. Germany is effectively striving for 50% renewable penetration by 2050.
- Spain's limit on wind energy is so high (13,000 MW) that it is effectively open ended as well.
- Note that Denmark has met its goal of 20% of electricity *generation* — not a percentage of capacity as in Ontario—and this has become a defacto limit (see Figure 6: Program Size Limits).

STANDARD OFFER CONTRACTS PROGRAM SIZE LIMITS				
COUNTRY	WIND	SOLAR	SMALL HYDRO	BIOMASS
Germany	No limits	No limits	No limits	No limits
Spain	13,000 MW	150 MW	2,400 MW	3,200 MW
Denmark	20%*			
France	1,500 MW			
Brazil	1,100 MW			
Minnesota	200 MW			
Austria		15 MW		

* percent of actual kWh generation, not capacity

Figure 6:
Program Size Limits

14. STANDARD OFFER CONTRACT PRICING

There is mounting evidence that renewable energy tendering systems can result in higher prices than those prescribed in Standard Offer Contracts.

A recent study produced by the Cambridge – MIT Institute reaffirms numerous other papers comparing tendering mechanisms with Standard Offer Contracts to support wind power development. The paper concludes that tendering systems may not result in the contracted capacity and can result in higher cost than Standard Offer Contracts.

Data on prices in Germany and Great Britain "...does suggest that the price paid for wind energy is already lower in Germany than in the UK, and that this is likely to remain the case over the medium term."

Moreover, the price bid under such tendering systems may not be representative of true costs because so little of contracted capacity is built. "It is thus questionable whether a competitive tendering process, which places such emphasis on reductions on the price paid for wind energy, is the most appropriate means of encouraging an expansion in capacity", say the authors.

The study concludes that the oft-stated reason for Britain's poor installation rate of wind energy due to planning hurdles was incorrect and to the contrary the reason was an insufficient price to pay for profitable projects.

At the core of the Standard Offer Contracts program is the pricing mechanism. As discussed in the Background section, fixed-price contracts are superior to other pricing mechanisms in terms of driving development in community-scale renewable energy.

Some may question whether it is possible to find an appropriate price for fixed-price contracts outside the price-setting function of a marketplace. However, prices for Ontario electricity generation have been set politically by the province for many years. Prices for renewable generation have been determined in many other jurisdictions with great success. Approximately 2/3 of the world's wind capacity has been created in markets with fixed price mechanisms; there is no

reason why Ontario can't emulate the success of Germany, France, Spain, and others. Fixed prices are appropriate for renewable energy, and have been clearly proven to generate strong results.

14.1 PRICING SUMMARY

OSEA Recommendation

OSEA recommends a fixed price approach for the various renewable technologies under consideration.

Figure 7:

OSEA Proposed Specific Prices

OSEA PROPOSED RENEWABLE STANDARD OFFER PRICES					
	YEARS	YIELD kWh/m ² /yr	SPECIFIC PRICE* \$CAD/kWh	AVG. BLENDED PRICE 20 YRS. \$CAD/kWh	NET PRESENT VALUE 20 YRS. \$CAD/kWh
Wind**					
High Wind (<1,100kWh/m ² /yr)	6-20	1100	0.069	0.091	0.047
Medium Wind (<900kWh/m ² /yr)	6-20	900	0.090	0.105	0.054
Base Wind (<650kWh/m ² /yr)	6-20	650	0.133	0.133	0.066
All	1-5		0.133		
Solar Photovoltaics					
Commercial Loans	1-20		0.83		0.414
With Soft Loans	1-20		0.67		0.518
Small Hydro	1-20		0.133		0.066
Biomass	1-20		0.133		0.066

* Adjusted 15% for inflation.

** Linear interpolation between Base, Medium, & High Wind.

Figure 7: provides a summary of the overall prices proposed. More detailed analysis of the pricing for individual technologies follows.

All prices are indexed at 15% for inflation, to match the RFP. Experience and further research may show that a higher rate of indexing is required for smaller projects (10MW and under).

Nevertheless, the NPV over the 20-year period is significantly lower because of the cost of capital for alternative investments (see Figures 8-10).

cantly lower because of the cost of capital for alternative investments (see Figures 8-10).

Rationale

- Two strategies for pricing were considered: a percentage of the retail price as in the original German feed law and as is used today in Spain, or fixed prices. The former is not appropriate for Ontario because of past provincial actions forcing the retail price below the cost of generation, and the prior tendency of parties to set the retail price for political reasons. Since one of the pilot program's principal objectives is to provide stability and certainty in pricing, past provincial action capping or cutting the retail price of electricity obviates a retail based price system.
- Picking the percentage of the retail rate that reflects a price sufficient to drive development is not much different than determining a price in the first place. If the price is pegged to the retail rate this negates the benefits of a fixed-price system to ratepayers. As retail rates rise over time, so do prices reflecting a percentage of the retail rate. Retail electricity rates can rise faster than inflation if fuel prices increase dramatically and a significant portion of the generation mix is dependent upon fossil fuels.
- The actual prices were based on industry assumptions that were input into the economic models presented by Bernard

Chabot at the pricing workshop. These details are discussed below in the Pricing Assumptions section.

- There is no evidence that an RFP process results in the development of more “higher-quality assets” than that developed by fixed-price contracts. There are some projects with poor technical and financial performance in either system.
- Fixed-prices, such as those proposed in the pilot program, provide opportunity to more participants than the RFP process, leading to many small projects. Lenders to small projects require higher debt-coverage ratios, and more conservative balance sheets than that typically required of large projects. Fixed-price contracts can therefore be expected to result in more “higher-quality assets” rather than less.

14.2 PRICING WORKSHOP

As part of co-ordinating contract design, OSEA organized a two-day workshop with internationally-renowned renewable energy economist Bernard Chabot. France’s national energy management agency, ADEME (Agence de l’Environnement et de la Maitrise de l’Energie), kindly donated Mr. Chabot’s assistance in designing specific tariffs for renewable energy in Ontario. Mr. Chabot is the architect of France’s Advanced Renewable Tariffs that have resulted in more than 330 MW of wind projects being constructed in the past four years--all less than 12 MW in size. 24 people participated in the price-setting workshop held January 10-11, 2005 in Toronto.

14.3 PRICING ASSUMPTIONS

A number of techniques and assumptions went into the determination of the prices:

- Chabot’s pricing model uses the Profitability Index (PI) Method. While simple, the model is sufficiently robust that banks, utilities, and other large institutions use it to weigh investment decisions. Results from Chabot’s Profitability Index Method show strong predictability correlations when compared with the prices paid in the German system that were derived from cash-flow models.
- Chabot’s model calculates prices needed to meet target profitability before taxes. OSEA’s calculations for wind energy assume no subsidies in the form the Wind Power Production Incentive.
- The Profitability Index is the ratio between the Net Present Value (NPV) of an investment and its initial cost. The NPV uses the average weighted cost of capital (nominal 8.2%), accounting for both the interest on debt (6.9%) and the desired rate of return on equity (13%). Chabot illustrated that in practice the Optimal Rule of PI is 0.3.
- There is very little actual experience with wind energy in Ontario. There is only 15 MW operating in the entire province.

A NOTE ON NET PRESENT VALUE OF FIXED PRICES

Most renewable technologies are capital-intensive with low or zero fuel costs. In this regard they more closely resemble large hydro power plants than fossil fuel-fired generators with their variable — and rising — fuel costs. As a consequence, the costs of electricity from long-lived, capital-intensive technologies, such as wind and solar energy, must be considered over periods of twenty years or more. Thus it is necessary to include the time-value of money in any discussion of the costs of electricity from Standard Offer Contracts for renewable sources of energy. One means for doing so is to use the Net Present Value of payments over the term of the fixed-price contract.

Net Present Value accounts for the effects of inflation and the cost of capital. The Net Present Value of a payment stream over time is less than the face value of the initial or year-one payment.

When discussing the cost of Standard Offer Contracts it is incorrect, and in fact misleading, to use the initial or year-one price as this does not reflect the true costs over time. It is more accurate to use the Net Present Value to reflect the cost of Standard Offer Contracts over time than to use the initial price.

Consider for example a fixed-price tariff of \$0.10/kWh for 20 years with no adjustment for inflation. The Net Present Value is ~\$0.05/kWh — depending upon the assumptions used — or about one-half that of the initial price in year one. This example conveys the importance of accounting for the future costs of generation from both fixed-cost, capital-intensive technologies, and from variable cost technologies dependent upon the future price of fossil fuels.

Even when prices are indexed with inflation, the Net Present Value of prices under Standard Offer

continued on page 38

Contracts are less than the year-one or initial price because the Net Present Value uses the nominal weighted cost of capital. Many analysts estimate that the cost of fossil fuels will increase at a rate greater than inflation during the next two decades. Even if Standard Offer Contract prices are fully indexed with inflation, these price increases will likely lag price increases for fossil fuels from increasing scarcity. Thus, fully or partially inflation indexed prices of renewable resources should offer an attractive advantage relative to the increasing cost of electricity from fossil fuels, especially natural gas.

With so little experience it is difficult to project installed costs with strong certainty. OSEA found a wide range of costs for installing commercial wind turbines in the province. OSEA chose to use a 1.5 MW wind turbine as a proxy for calculating installed costs relative to the area swept by the wind turbine rotor. Defining installed cost in these units makes redundant the different rating systems used by different manufacturers of wind turbines and is more directly related with annual specific yields than costs in dollars per kW of generator capacity. OSEA assumed an installed cost of \$675 CAD/m² as representative based on data from an OSEA member organization.

- The model in this report assumes that 15% of prices are adjusted for inflation to match the RFP. However, Chabot recommends fully adjusting prices for inflation and in France prices are indexed at 60%.
- As in the German and French programs, OSEA proposes using the same initial price during the first five years of operation for all wind projects less than a nominal 10 MW at 44 kV or less.

14.4 WIND POWER PRICES

OSEA Recommendation

For wind, OSEA recommends a pricing mechanism that provides differential pricing based on productivity or specific yield. Annual specific yield in kWh per square meter of rotor-swept area (kWh/m²/yr) is the wind industry's standard measure of productivity.

All wind projects will receive the same price for the first five years and in years 6-20 the medium wind and high wind sites will receive proportionally lower prices.

- In years 1-5 of the contract, the price would be \$0.133 CAD/kWh
- In years 6-20, the price would depend on the actual yield observed in years 1-5
 - For base wind: \$0.133 CAD/kWh
 - For medium wind: \$0.09 CAD/kWh
 - For high wind: \$0.069 CAD/kWh

EXAMPLE:

A wind turbine on the shore of Lake Huron at an optimum site for Ontario with a productivity of 1,100 kWh/m²/yr will be paid \$0.133CAD/kWh for years 1-5 and \$0.069 CAD/kWh for years 6-20. The *average* price (average of all 20 years) equates to \$0.091 CAD/kWh. Significantly, this is only \$0.01 CAD/kWh more than the average bid price in the province's renewable RFP. The *net present value* of this price is \$0.047 CAD/kWh after accounting for both inflation and the cost of capital during the 20-year contract life.

FIXED PRICE (AS OPPOSED TO VARIABLE OR SPOT-MARKET PRICE) ADJUSTMENTS FOR INFLATION

	INFLATION ADJUSTMENT AS PERCENTAGE OF CPI
Germany	0%
Ontario RFP	15%
France	60%
OSEA Proposed	15% (to be evaluated, may need to be increased)
California ISO4, EPO1	Fixed Forecasted 10-year Avoided Cost
California ISO4, EPO2	Fixed Forecasted Levelized 10-year Avoided Cost
California ISO4, EPO3	Fixed Forecasted Incremental Energy Rates from then Current Oil & Gas Costs
California FSO4	Ramped for Inflation

*ISO4: Interim Standard Offer Contract 4 (New Contracts Suspended 1985).

**FSO4: Final Standard Offer Contract (Never Implemented).

The actual price in years 6-20 would be a linear interpolation between the three tranches; that is, a site that falls between a medium wind and a high wind site will be paid according to where the annual yield falls relative to the medium and high wind yields.

Specific details of the pricing mechanism:

- For the first five years of operation all wind turbines receive the same price.
- In the sixth year, the average of the first five years of operation is determined after removing the highest and lowest year of generation.
- The resulting average annual specific yield is compared to a linear interpolation between the values shown in the accompanying figure (see Figure 7 below).
- An energetic site with a well performing wind turbine generating more than 1,100 kWh/m²/yr will receive payment of \$0.069 CAD/kWh in year 6, but no less.
- A wind turbine delivering less than 650 kWh/m²/yr will receive \$0.133 CAD/kWh in year 6, but no more.
- Between these values, the price will vary linearly with annual specific yield.

Rationale

Three Tranches for Wind Energy

- OSEA proposes three tranches for sites representative of base wind, medium wind, and high wind. This approach ensures that wind power is distributed across the province, rather than being concentrated in a few high-wind locales.
- Some have argued that fixed prices through Standard Offer Contracts do not provide economic efficiency, because the contracts are available to all. Despite the fixed prices in a series of tranches, economic efficiency is encouraged in the pilot program as explained below.
- As productivity or specific yield increases, so too does profit, providing an incentive to use the most energetic resources first, creating competition for the most productive sites. Lowering prices in years five through twenty does limit maximum profitability but doesn't limit the total amount of profits; allowing much higher profits than that relative to areas with weaker

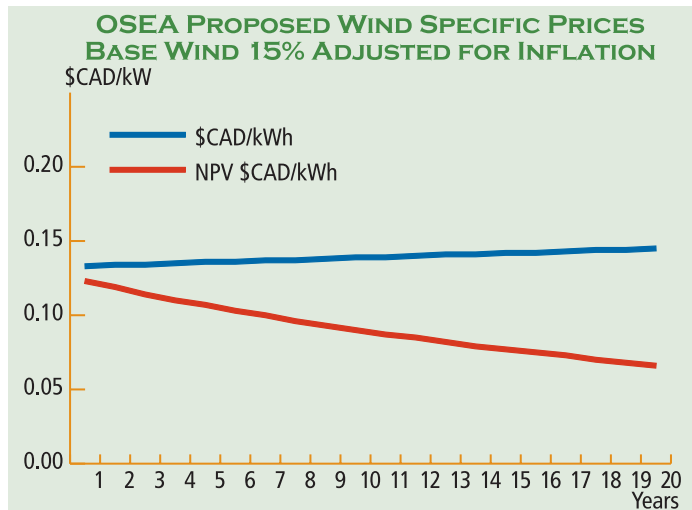


Figure 8: OSEA Proposed Specific Prices Base Wind.

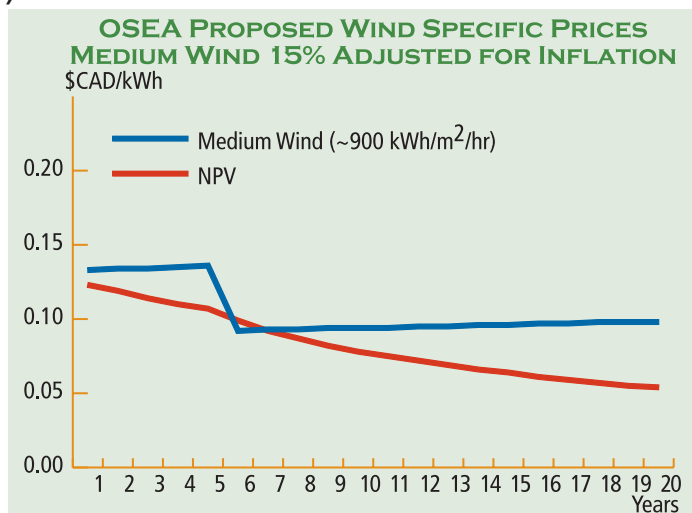


Figure 9: OSEA Proposed Specific Prices Medium Wind.

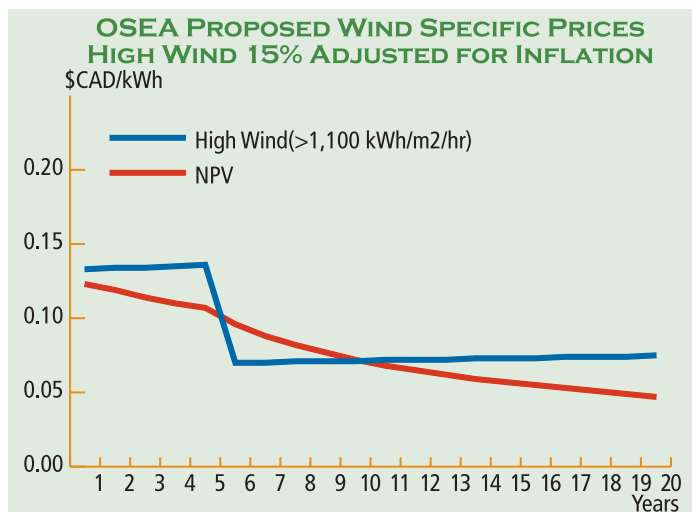


Figure 10: OSEA Proposed Specific Prices High Wind.

**EQUIVALENT WIND SPEED
FOR ANNUAL SPECIFIC YIELD
AT HUB HEIGHT**

YIELD kWh/m ² /yr	WIND SPEED m/s
650	~5.6
900	~6.44
1100	~7.05

Rayleigh Distribution

wind resources. So while the pricing model is designed to provide the minimum profitability to stimulate wind development at feasible locations throughout the province, it simultaneously rewards economic efficiency.

- Though the first-year price per kWh may be higher than bid prices for windy locales, the cost risk to the province is minor. Development risk is borne entirely by the project proponent, not the province. If the site has lower productivity than that needed for a profitable venture, the risk falls entirely on the equity and debt holders of the venture. The province, because it only pays a per kWh price, pays only for actual generation. When production is low, so are total payments.

Reference Points for Wind Energy Prices

One of the challenges in establishing prices is the consideration of the different levels of productivity and output from different turbine models and different wind regimes:

- Both the German and French systems adjust prices for wind energy as a function of the productivity of a specific wind turbine at a specific site from its actual average generation.
- The German model uses a series of reference wind turbines and compares actual average generation to the reference turbines. This is relatively simple in Germany where the wind resource is well known and there are numerous research centers and test sites with data on wind turbine performance in the field.
- The French model opted for an alternative strategy because wind data and data on performance of wind turbines in France are not as extensive as in Germany. The French model compares site productivity in full-load hours (the European equivalent of capacity factor) to Chabot's reference profitability targets.
- Reliance on wind turbine generator rating and the resulting capacity factor is always dangerously misleading as there are no international standard ratings for wind turbines. Consequently, manufacturers can game any system using capacity factors or full-load hours by "rating" or identifying their wind turbine with the generator size that serves their marketing needs best. The French have quickly realized this problem, as have the Dutch.

Annual Specific Yield

- Chabot's proposal for Irish Standard Offer Contracts uses annual specific yield instead of capacity factor to correct the problem. Annual specific yield in kWh per square meter of rotor-swept area (kWh/m²/yr) is the wind industry's standard measure of productivity.
- OSEA has chosen to use annual specific yield for wind energy Standard Offer Contracts in Ontario.

- OSEA targeted a Profitability Index of 0.35 for sites with average annual specific yields of 1,100 kWh/m². This is probably the optimum yield that can be expected from sites in southern Ontario.
- At low yield sites, profitability will be much less. This encourages economic efficiency by directing development toward windier sites first. The Profitability Index for the low wind targeted yield of 650 kWh/m²/yr is only 0.1.

Ensuring Responsible Profit Opportunities

One of the misperceptions with fixed price programs is that the system could be manipulated to generate unfair or excessive profits, at the expense of the ratepayer. In fact, the very nature of the pricing model proposed ensures that the prices are derived based on reasonable profit assumptions to start with. By basing the model on actual yield, reasonable profit levels are automatically entrenched in the process. Furthermore, the process of removing the high and low years from the five-year evaluation point ensures that developers cannot game the system.

As noted previously, the pricing model also encourages good planning and economic efficiency. While minimum acceptable profit levels will encourage more widely distributed generation across the province, there is still sufficient incentive to encourage the development of the most economically feasible sites first.

14.5 SOLAR PRICES

OSEA Recommendation

OSEA considered two cases; commercial loans and soft or low-interest loans (see Figure 11-12):

- With commercial loans, OSEA recommends a price of \$0.83 CAD/kWh for the 20 year duration of the contract
- For soft or low interest loans, the recommended price is \$0.67 CAD/kWh for 20 years.

OSEA does not recommend any differentiation in pricing by size of installation at this time.

Rationale

- The prices selected were based on the results of the modeling exercise at the Chabot workshop.
- In Germany and Spain, Standard Offer Contracts for solar photovoltaics are differentiated by project size. In these programs roof top installations, typically less than 5 kW, are paid one price, large central station plants a lower price. For exam-

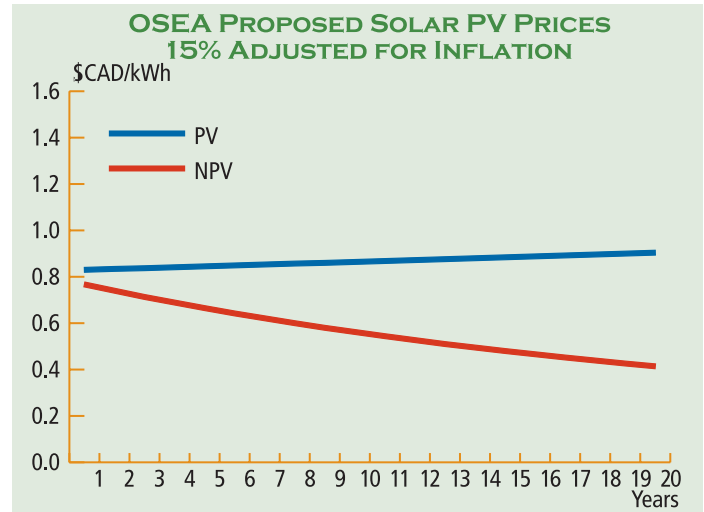


Figure 11:
OSEA Proposed Solar PV Tariffs for Ontario with Commercial Loans.

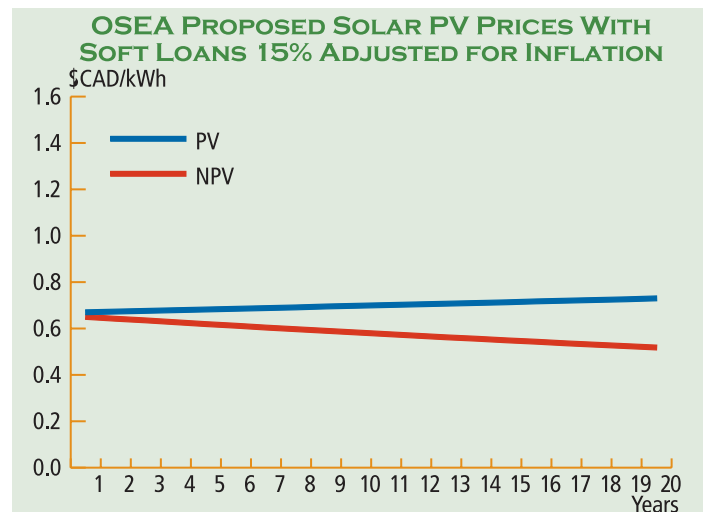


Figure 12:
OSEA Proposed Solar PV Tariffs for Ontario with Soft Loans.

ple, in Spain, installations less than 100 kW are paid 575% of the retail rate (about \$0.68 CAD/kWh) for the first 25 years of operation. Larger systems are paid less. Projects greater than 100 kW are paid 300% of the retail price, or \$0.35 CAD/kWh.

- There is so little experience with grid connected solar photovoltaics in Canada that it is not warranted to differentiate prices by project size. OSEA polled the Canadian Solar Industries Association (CanSIA) for the cost of a typical roof top installation. While the industry suggests it can install 3 kW roof top photovoltaic systems for \$7,000 CAD/kW, this estimate does not conform to experience in California or elsewhere, nor with the experience of installers in Ontario.
- OSEA chose an installed cost of \$10,000 CAD/kW with an annual generation of 1,400 kWh/kW of installed capacity – typical of Ottawa.

14.6 SMALL HYDRO & BIOMASS PRICES

OSEA Recommendation

OSEA proposes using the first-year price for wind projects as a placeholder for small hydro and biomass plants of \$0.133 CAD/kWh.

Rationale

OSEA has focused its expertise on wind power rather than small hydro and biomass plants. OSEA coordinated our workshop with representatives from the agricultural biomass community and we attempted to find data on small hydro. One of the participants in the Chabot pricing workshop represented Keller Engineering Associates of Ottawa, designers of small biogas plants for dairy operations. They analyzed the production data are from an anaerobic digester in Cobden, Ontario, operating on a dairy farm with 140 milking cows. Capital cost and operating expenses are based on the experience in Cobden. Keller Engineering assumed:

- financing: 100 % credit (farm credit), no equity from the farmer required,
- the biogas engine is using 10% diesel fuel and 90% biogas (Schnell Germany, Bi-fuel piston engine),
- only biogas production with manure (no Co-Substrates),
- no value is given to heat production (some can be used for heating the residential house),
- no taxes,
- straight line pay-back with interest (annuity), and a
- profitability index 0.1, because the farmer has other, non monetary, advantages from the system such as odour reduction and improved fertilizer quality.

Keller Engineering, using the Chabot method, found that a 20-year contract with an initial price of \$0.131 CAD/kWh would be necessary for limited profitability.

15. FEDERAL WIND POWER PRODUCTION INCENTIVE

OSEA suggests there are two reasonable alternatives with respect to how the Federal Wind Power Production Incentive (WPPI) is factored into the pilot pricing.

OSEA Recommendation

In general, OSEA recommends that WPPI not be included in any price determination. This can be achieved in two ways.

One policy option is for the Ministry to require that all projects participating in the pilot program apply for WPPI payments if they qualify. At the end of each year for which a project receives WPPI payments, the proponent should provide a report to the province indicating what funds were received under the WPPI program. The province would then reduce their payment rate in the following year by the WPPI subsidy for the equivalent volume of power purchased, less a mutually agreed upon fee. In this way a \$/kWh rate can be calculated for the next WPPI reporting period. The fee is to recognize the services of the project owner in administering the WPPI application and reporting process.

Another policy option is for the standard offer contract price to be reduced by the amount of the WPPI payment, a so-called claw back. However, the standard offer contract price would return to the appropriate value, indexed for inflation that would have been paid had WPPI not been available, once the WPPI payment expires at the end of ten years.

Rationale

- WPPI is a federal program over which the province has no direct control and consequently cannot predict future direction and outcomes and how they affect Ontario projects.
- Funding under WPPI is uncertain. Previously, Ontario's allocation of the federal WPPI subsidies was fully booked following the Ministry's renewable RFP. The federal Liberal Party recently increased the funding in the Federal Budget, but has no control over the future requirements required to support Ontario's growth potential.
- There are onerous restrictions in the WPPI program that restrict the province's ability to act. If the price paid under the pilot program is more than \$0.14 CAD/kW for projects less than 5 MW, \$0.12 CAD/kWh for projects 5 MW to 10 MW, or \$0.10 CAD/kWh for projects greater than 10 MW, the federal government will either stop paying WPPI, or they reserve the right to demand repayment of WPPI.
- An equally important consideration is that WPPI only applies to wind energy. Small hydro, biomass and solar do not receive a similar incentive; therefore the playing field for the pilot program needs to be levelled.

Discouraging Gaming and Speculation

Historically, programs have been most susceptible to gaming when caps or limits were placed on program capacity or the time allowed to enter contracts was too limited. This was the experience with California's SO4 contracts and Minnesota's first community wind premium. Limiting program size or duration often leads to a "rush" for contracts.

There are a number of means for allocating contracts, for example by eliminating program caps, requiring a degree of local ownership or completion of certain project milestones.

Removing the Cause – Eliminating Program Caps

As stated, the simplest and most effective means for avoiding a rush for contracts or a hoarding of contracts is to ensure that the pilot program is sufficiently large or of a long enough duration that everyone who wishes to participate believes they will have an opportunity to enter a contract when they are ready.

Local Ownership Requirements

Qualification for contracts under the pilot program could be limited to projects with some certain minimum of local ownership. The Danish wind turbine co-operative movement was born out of such limitations in the Danish standard offer contract program. Initially to qualify equity owners of a wind turbine had to live in the county where the wind turbine was located. Later this was expanded to include residents of neighbouring counties. Even this requirement was successfully "gamed" toward the end of the program by residents of Copenhagen "buying" small plots of land in a farmer's field on the west coast of Jutland, in effect becoming a "resident" of the area and qualifying for the standard offer contract. Though the city

- WPPI is only paid for ten years, and not the full twenty years of the pilot program contract; thus WPPI cannot be relied upon to make up the price differential required for the duration of renewable energy projects.

16. APPLICATION PROCESS & AWARDING OF CONTRACTS

As mentioned previously, the pilot requires a simple and streamlined process for the application and awarding of contracts. Guidelines are required to ensure contracts are accessible and to discourage unfair practices by speculators.

16.1 APPLICATION FOR CONTRACTS

OSEA Recommendation

At a minimum an application for a contract should contain the:

- Name of the project,
- Name of proponent,
- Feeder location and size,
- Evidence of site control,
- Size of project, and
- Technology employed (wind, hydro, solar, biomass).

16.2 ALLOCATION OF CONTRACTS

OSEA Recommendation

Contracts would be awarded on a first come, first served basis to all those who can demonstrate site control. The contracts will be issued within 90 days of filing an application with the Ministry of Energy.

Contracts would be awarded to all eligible participants as defined earlier, which include farmers, other rural landowners, First Nations, community groups, co-operatives, businesses, municipalities, NGOs and combinations thereof.

The simplest and most effective means for avoiding a rush for contracts or a hoarding of contracts is to ensure that the pilot program is sufficiently large or of a long enough duration that everyone who wishes to participate believes they will have an opportunity to enter a contract when they are ready. OSEA suggests the pilot program run for a minimum of five years to reassure farmers and others that there is ample time for thorough pre-project planning and evaluation.

Other mechanisms that may be considered in terms of discouraging speculation are highlighted in the sidebar *Discouraging Gaming and Speculation*.

Rationale

- The first come, first served process is fair
- Site control ensures that the proponent has arranged the proper site agreements with the landowner to permit development.

- As mentioned previously, the pilot program should be inclusive not exclusive. One of the pilot program’s key goals is to enable as broad access as possible. Thus, the pilot program should be open to all potential participants.
- Nevertheless, the pilot program is intended to help local landowners and organizations participate in the province’s call for new power generation and it may be necessary to find mechanisms that discourage gaming or manipulation of the program to other ends.

17. INTERCONNECTION

A cornerstone of Standard Offer Contracts is the right to connect to the grid. OSEA has provided a number of recommendations in this regard.

OSEA Recommendation

All participants in the pilot program must have the right of interconnection with simple and transparent contract terms. A number of related terms must be included with this right.

Response Time to Request for Interconnection

Requests for interconnection to Hydro or Local Distribution Companies (LDCs) should receive a response within 90 days detailing technical requirements, equipment needed and any other conditions reasonably deemed necessary.

Transparent Process

The interconnection process must be transparent and orderly. Interested parties need to be aware of where their application sits relative to others in the area and the application process must be managed in an orderly fashion.

Costs of Interconnection

Direct costs associated with interconnection, including cabling and/or burial of underground feeders to the nearest interconnection, transformers and metering should be paid by the developer.

Costs of Network Upgrades

A key advantage of the proposed pilot projects is that they will generally avoid the major transmission issues facing larger projects. Since they are connecting to the distribution system there are fewer potential network upgrade issues. Nevertheless, if these are required, it is proposed that all costs associated with network upgrades be borne by the system and placed in the rate base and not placed on developers under the pilot program.

Rationale

- The province has determined that renewable energy technologies are a valuable addition (cleaner air and reliability of supply) to the generating mix. These benefits should be reflected by giving priority connection to distributed renewable energy projects.

resident legally “owned” the small plot of land just big enough for the wind turbine, the plot was managed as before by the rural landowner.

Maximum Limits on Total Ownership

To avoid hoarding or concentration of the Standard Offer Contracts in the hands of speculators, contracts could be limited to a maximum number of megawatts for each equity owner prorated on their ownership in each project. Alternatively contracts could be limited to a maximum number of megawatts awarded per year. One suggestion was to limit the maximum number of contracts to 20 MW per proponent per year. These are policy suggestions, not recommendations. *OSEA has no position on ownership restrictions so long as sufficient contracts are available for all farmers, First Nations, co-operatives and community groups who want them.*

Expiration of Unexecuted Contracts

Another means for discouraging speculation is to limit the amount of time a project developer has to complete a project and deliver electricity to the network. One year may be too little time to develop a multi-million dollar project. Two years should be sufficient. For example, if a project was not built within two years of receiving a contract and was not withdrawn, the contract would expire. Given that permitting timelines can sometimes be unpredictable, it may be necessary to adapt this simple milestone requirement to include evidence that planning hearings or appeals are underway to prevent the contract from automatically expiring.

- The interconnection process can be and has been needlessly complex and expensive for developers in Ontario. For community-scale projects the existing process and its costs can be disproportionate to the scale of the project and this cost creates a cumbersome deterrent to participation.
- Interconnection should be made as simple as technically possible to ensure the widest participation possible in the pilot program. Currently, the time, expertise and costs associated with interconnection act as a strong barrier to community-scale projects.
- As a part of Hydro One's plan to strengthen the province's network it will undertake extensive and expensive steps to improve its system. There may be a perverse incentive to pass some of these costs to renewable generators. Network upgrades benefit all generators and all consumers. Thus it's unfair to place these burdens on renewable generators. In the first renewable RFP, costs of network upgrades were borne by Hydro One. Any unusual or extraordinary costs should be borne by the system and ultimately Ontario's ratepayers.
- OSEA recognizes that an overall review of the infrastructure requirements to support new renewable energy generation is underway, along with options for funding these costs. OSEA is prepared to work with the province on integrating solutions for community-scale projects into the broader system framework.

18. PERIODIC PILOT PROGRAM REVIEW AND REPORTING

Since Standard Offer Contracts represent a new and innovative approach in the Ontario market there is a need to periodically evaluate the program to ensure it is meeting its objectives appropriately. Both the French and German programs have provisions for periodic review of their programs including pricing, the process and terms of interconnection. In addition, there are some potential reporting requirements for projects that would benefit the province in meeting their overall renewable energy targets.

OSEA Recommendation

OSEA recommends four areas of program review/reporting that should be considered:

- Prices and Process
- Development Rate
- Performance Monitoring
- Wind Data

Pricing and Process Review

- Every two years the OPA should report to the Minister of Energy on the status of the pilot program. This would enable OPA and the Minister to modify future contracts by increasing prices if necessary.

- However, to achieve the principal objective of the pilot program, the five-year length of the program should not be shortened nor the initial price lowered during this period. Prices could be raised, but not lowered.
- This assures manufacturers who locate in Ontario to serve the Ontario market that the market is stable, if not growing.
- The review can be useful for identifying obstacles to the uptake of the pilot program, for example, by correcting problems with interconnection.

Development Rate Assessment

- The periodic review of the pilot program should specifically determine if the rate of growth in renewable generation is satisfactory to meet the government's targets.
- The review should determine if development is being overly concentrated in certain areas to the exclusion of others. To gain the benefits of distributed generation, it must in fact be distributed geographically.
- The review should also identify rural areas that have benefited from the pilot program, evaluate the local and regional economic benefits and the stimulation of any new manufacturing and service jobs.

Performance Monitoring

- All participants in the program should agree to, at a minimum, an annual monitoring and performance evaluation.
- Seasonal data may be helpful as well, particularly as it relates to the correlation of generation with demand, the effect of variable renewable resources on time of day delivery, loss of load probability and their effect on spinning reserve and reserve margins.
- Data from participants should be published on the Internet in the form of downloadable spreadsheets or databases. At a minimum, tabulated data should be provided on the Internet in downloadable form.
- Wind, hydro and biomass projects should all be required to participate. For solar PV, reporting could arbitrarily be limited to any projects 10 kW or greater.

Wind Data Reporting

- Most wind projects of the proposed scale will initially collect 1-2 years of wind data before they erect turbine(s). All such wind data collected by participants in this pilot program should similarly enter the public domain.

Rationale

- For the periodic reviews to be effective, the pilot program must also provide for collecting and analyzing data on performance and other criteria.

- The proposed five-year pilot program of Standard Offer Contracts is a public program for the benefit of the communities where the renewable generation will be built, and for ratepayers. In the case of wind energy, the public's right to all wind and production data under the program requires the collaboration of participants in the pilot program.
- Quarterly performance reporting has been required from California wind projects since the mid-1980s and has not proven burdensome.
- With respect to the provision of wind data, this provides ratepayers and all Ontarians with the benefits of data that will help identify the wind resource across the province. Similar to the benefits of performance reporting, this improves the knowledge base upon which government and the private sector can act.

19. PILOT PROGRAM ADMINISTRATION

OSEA has provided recommendations in terms of overall responsibility for administration of the program as well as a mechanism for dispute resolution.

OSEA Recommendation

Administration Responsibility

- The pilot program can be administered initially by Ministry of Energy staff and switched to the Ontario Power Authority once it is functioning. Ministry staff have the experience necessary as result of the renewable energy RFP.

Identify Ombudsperson for Pilot Program

- Identify an Ombudsperson for the pilot program within the OPA or clearly state who is an arbiter of disputes over interconnection between the small project developer and the LDC or grid operator.
- The Ombudsperson could potentially serve as a clearinghouse within the OPA for information about the pilot program.

20. IMPLEMENTATION TIMING

The timing for implementation of this pilot program needs to be decided within the overall timeframe of the government's renewable energy strategy.

OSEA Recommendation

- The pilot program should be implemented immediately.

Rationale

- Enough is known about the costs, about the prospects and about the need for renewable power generation to justify immediate implementation. There is no reason to delay implementation.

- An immediate start will also provide sufficient lead time for projects to begin demonstrating results in time for the first (2007) renewable energy milestone.
- Fortunately, much of the administrative work preparing contracts for winners of the renewable energy RFP can be used to prepare simplified Standard Offer Contracts for the pilot program.

21. PILOT PROGRAM NON-PRICE BENEFITS

The renewable energy RFP weighed price and price only. There are, however, other benefits that accrue from renewable energy development besides price. The decision itself by the government to close the coal plants and begin introducing renewable generation is an acknowledgement of these non-price benefits.

Economic Development

Historically, no manufacturing of renewable energy technologies has arisen in markets dominated by tendering systems. In contrast, countries that have adopted Standard Offer Contracts, such as proposed in the pilot program, dominate the manufacturing of wind turbines and biomass plants. The pattern is now repeating itself with the manufacturing of solar photovoltaics cells and panels.

The most dynamic markets for renewable technologies are found in jurisdictions with the most aggressive standard offer prices. There is a direct correlation between jurisdictions that have used or now use Standard Offer Contracts and the rate of renewable energy development and the rate of manufacturing job growth.

With the exception of distributed generation's improvement on line losses, no attempt has been made to quantify these benefits except to acknowledge that they are non-zero and should be considered.

Local & Regional Economic Benefits

David Milborrow, writing in *WindStats* (Vol. 17, No. 3, Summer 2004, page 1-3) on the value of wind energy in increasing employment and economic activity concludes that total non-environmental benefits of renewable energy (increased employment, improved security of supply, reduction in fuel-price volatility) are worth \$0.01/kWh at a minimum and possibly double that. In particular, the benefits include:

New Jobs

- It is estimated that there are an average of 11 jobs/MW of new capacity. Contemporary wind turbines are from 1.5 to 3 MW in size.
- Each wind turbine installed therefore creates 15 to 30 new jobs when there is a stable and growing market for new renewable capacity.

Local Construction Spending

- One-quarter of wind turbine construction costs flow through the local economy. For example, of a wind turbine costing \$2,000 CAD/kW, about \$500 CAD/kW will be spent on local construction.
- Minnesota small wind project developers, mostly farmers, have made a point of hiring local contractors from their own communities.
- Installing a 1.5 MW wind turbine in Ontario would require about \$750,000 in construction activity, much of which flows through the regional if not the local economy.

Ongoing Operations Spending

- Estimates suggest that operations and maintenance pump \$5-\$14 CAD/kW of installed capacity into the local economy.
- A 1.5 MW turbine would therefore create from \$7,500 to \$21,000 CAD sales and services that are often locally sourced.

Security of Supply

- The benefits from increasing security of supply by developing renewable energy are estimated to be worth as much as \$0.01/kWh.

Local Content Requirement

Local participation and an equity interest in renewable projects are central to maximizing the economic benefits from renewable energy development for host communities and for the broader Ontario economy. To maximize these benefits for Canadians and Ontario ratepayers in particular, the government may wish to require local content as a qualification for the pilot program.

There currently is only one commercial wind turbine manufacturer in all of North America. Towers are often sourced regionally, but not always. Some towers for large North American projects have been sourced in Korea. Since there presently is a dearth of suppliers in North America for most renewable energy products it would be necessary, as in Quebec's wind RFP, to introduce local content requirements gradually to avoid strangling development in its infancy.

Education and Creation of Conservation Culture

One of the often stated goals of the Minister of Energy is creation of a "conservation culture" in Ontario. Renewable power projects, especially wind, biomass and solar plants, are highly visible and could become compelling symbols of the government's commitment to energy conservation and renewable energy. As farm writer Elbert van Donkersgoed says "to appreciate means knowing." As wind turbines, solar panels, new small hydro and biomass plants are built across the province as a result of the pilot program, consumers will begin to appreciate the importance — and the value — of electricity generated using renewable/non-polluting sources.

Distributed Generation Benefits

One of the chief benefits accruing from the modularity of renewable energy technologies is their ability to be distributed across the network. The pilot program's Standard Offer Contracts specifically enable development of distributed generation in towns, villages, cities and among farms and businesses across the province, providing the benefits that distributed generation offers: increased network stability, reduced transmission losses, longer life for transmission assets, and a diversity of sources that minimizes dependence on any one technology, owner, or fuel source.

Minimizing Line Losses

For the past decade there has been a growing acknowledgement that distributed or embedded generation reduces transmission and transformation losses. These losses average approximately 9% of total electricity consumed in Ontario. Small renewable power projects located close to load reduce the line and transformation losses on the system. The pilot program envisions participants limited to connection at 44 kV or less to assure that the generators are embedded in the system. This maximizes their contribution to reducing line losses.

While no specific payments need be made for the system benefits provided by reducing line losses, these benefits should not be ignored. They should be acknowledged in any estimate of the pilot program's costs and benefits. In the accompanying tables, the pilot program's cost to provincial ratepayers, the value of reducing line losses is set at \$0.01/kWh in today's dollars.

Serving Peak Demand

There may be benefits from some technologies such as small hydro or biomass plants that can provide a portion of their generation during periods of peak demand. Storage not only enables the system to better meet peak demand but also enables it to effectively use variable resources, such as wind and solar energy, and benefit the entire electrical network.

22. COST TO THE PROVINCE AND TO RATEPAYERS OF THE PILOT PROGRAM

There is little or no cost to the provincial treasury as a result of the proposed pilot program. Costs of fixed-price contracts are borne by all electricity consumers. There would be much less administrative cost for the pilot program than for the existing RFPs.

If the incremental cost for S.O.C is viewed in relation to overall system electricity costs, it becomes apparent that the impact is very slight.

For example, if 1000MW of base wind power is installed under this program, the incremental cost/kWh over the entire rate base would be \$.00050, or five one-hundredths of a cent (see Figure 13). These costs are slight because they are spread over 150TWh of electricity.

PILOT PROGRAM RELATIVE COSTS		
Cost to ratepayers per kWh		
	INCREMENTAL COST OF S.O.C. \$CAD/kWh	ASSUMED INSTALLED CAPACITY MW
Base Wind SOC	0.00050	1000

Figure 13.
*OSEA Pilot Program
Relative Costs.*

23. RISK MITIGATION

A number of potential risks have been identified throughout the consultation process. OSEA has responded to these items and suggested how they can be mitigated.

Risks of Delivery of Contracted Capacity

There is a concern that the province, as buyer, will have as much an administrative burden for due diligence of suppliers under the pilot program as under the RFP process.

However, this will not be the case. All financial and delivery risk remains solely with the developer under the pilot program. Standard offer contracts do not entail any significantly greater risk than contracts awarded under the RFP process. No projects under the existing RFP process have yet been built and it would be premature to believe that all will be built. Where standard offer prices are high enough to produce a reasonably profitable investment, they have resulted in more operating renewable generation than tendering systems.

Unlike the renewable RFP process, no onerous performance bonds are required in the pilot program. Onerous performance bonds are unwarranted as projects that fail to deliver energy are simply not paid. The small project developer assumes all financial risk.

Liability of the Province

Another concern is the potential exposure of the province in terms of liability. However, the province is simply the buyer of generation from the pilot program. There is no need for requiring costly liability insurance simply to protect the province from a potential liability that does not exist. The purchase of liability insurance, as are all other financial decisions, is the domain of the small project developer. Lenders will require developers to purchase insurance as necessary and prudent to protect the investment.

24. SUMMARY AND NEXT STEPS

In summary, OSEA has developed the key framework for the implementation of a successful and industry-leading Standard Offer Contracts pilot program. The recommendations are based on sound research into the best practices around the world. The process engaged experts with these systems from the markets that have seen dramatic results in new renewable energy generation over a sustained period. These practical, proven insights have been integrated with the unique needs and structure of the Ontario market to arrive at a process that we believe will deliver rapid, cost-effective new renewable generation to the province, along with a host of economic, social and environmental benefits.

Next Steps

OSEA suggests a number of important next steps to ensure this policy framework moves from the development stage to implementation in a timely and responsible manner:

- **Internal Review** – clearly, the first step is review and discussion of the proposed program within the Ministry of Energy as well as other related Ministries and agencies. OSEA is prepared to be available during this period to address any questions that arise.
- **Stakeholder Consultation** – OSEA believes that an extensive stakeholder consultation has already been executed as part of the development of this document; however it is the prerogative of the Ministry to determine if further consultations are required. OSEA can support the Ministry in identifying key stakeholders from the community renewable energy sector, and assist in this process.
- **Detailed Program Design** – While OSEA has provided an extensive framework for the pilot program, additional details related to program operation and administration will need to be worked through to prepare the program to be ready for implementation. In particular, OSEA believes the interconnection aspects of the program will need to be addressed with the relevant parties as quickly as possible to ensure the details for this critical capability are completed in time for the program launch. Again, OSEA believes it can assist the Ministry in the detailed design stage.
- **Staff Training** – To properly administer the pilot program, staff may require specialized training, including the understanding of the pricing model. OSEA proposes that Bernard Chabot be engaged to build capacity among staff for this program.
- **Policy Implementation** – OSEA believes that time is of the essence if the province wants to realize the benefits of this program as well as to have sufficient time to assess its effectiveness. Accordingly, OSEA recommends that the policy for this pilot be implemented as soon as possible, within 90 days, so that participants can commence developmental activities in 2005 and the results can begin to be seen by the first renewable strategy milestone in 2007.

In closing, OSEA appreciates the opportunity to support the province in the development of this exciting pilot program. The leadership demonstrated by the province in undertaking this initiative will result in the creation of a dynamic renewable energy market in Ontario, while helping to improve the air quality and environment for all.

APPENDIX A: RELATED POLICY MECHANISMS FOR COMMUNITY POWER

This document has summarized the key details of a Standard Offer Contract that is viewed as essential to facilitate the development of community-based renewable energy in Ontario. While the Standard Offer Contract program is the critical cornerstone, a number of other policy mechanisms have been identified by OSEA as having potential merit in further advancing smaller-scale renewable energy and creating a more level playing field for these projects. These are briefly outlined below; however a more detailed analysis of the options and their benefits to the Province is recommended.

1. COMMUNITY POWER INNOVATION FUND

In order to ensure the effective participation of community organizations in the delivery of Standard Offer Contracts, OSEA proposes the development of what is referred to as the Community Power Innovation Fund (CPIF).

Standard Offer Contracts (SOCs) are a market mechanism to enable small project developers to participate in meeting the province's goals for renewable energy generation. SOC's include participation by the private sector, municipalities, First Nations, community groups, co-operatives, associations of landowners, farmers, etc. However, for certain groups wanting to participate, (for example, a community organization or an association of landowners who come together for the express purpose of developing a renewable energy project), access to capital for both organization and project development is often difficult to come by. Germany's unparalleled success in the rapid deployment of renewable energy was in part due to the ready availability of low-interest loans from a revolving public fund.

Size

- \$5,000,000 by end of 2005
- \$10,000,000 by end of 2006

Mandate

To provide a sector specific fund to support the participation of community nonprofits and cooperative organizations in the development of green power generation in Ontario. The fund will include both a grant and loan component.

Grant Component To Cover:

- Incorporation
- Bylaw Development
- Project Planning
- Pre-feasibility study
- Communications
- Training (Project Management, Governance, Community Engagement, Technical Coordination)

Loan Component To Cover:

- Business Plan (with triple bottom line accounting)
- CED Plan and Process
- Land Option Agreement
- Land Lease Agreement
- Feasibility Study
- Interconnection Study
- Resource Assessment Study
- Environmental Assessment
- Planning Permit
- Supplier Agreement
- Power Purchase Agreement
- Offering Document and Membership Agreement

Potential Contributors

Ministry of Energy

- Tick Box on Ratepayers Bills
- Proposed Seed money (\$3,000,000)

The Ontario Trillium Foundation

- ~ 2,000,000 to support community power projects from 2000-2005

Local Credit Unions

- Each would contribute a minimum of \$100,000

Federal Government

- Industry Canada – Social Economy Fund
- Natural Resources Canada – Clean Fund
- Kyoto Funds

Federation of Canadian Municipalities

- Sustainable Communities
- Green Municipal Engagement Funds, Green Municipal Investment Funds

Social Capital Partners

- Up to \$1,000,000

Eligibility

- Community non-profits and cooperatives;
- Joint Ventures whereby community non-profit or coop is at least an equal proponent of the project (project would be eligible for a % of funding that matches the % of ownership of the project by the community non-profit or coop;
- Project size between 3 and 10 MW;
- Incorporation of triple bottom line accounting, process for community engagement to determine social returns;
- Proof of capacity to deliver project.



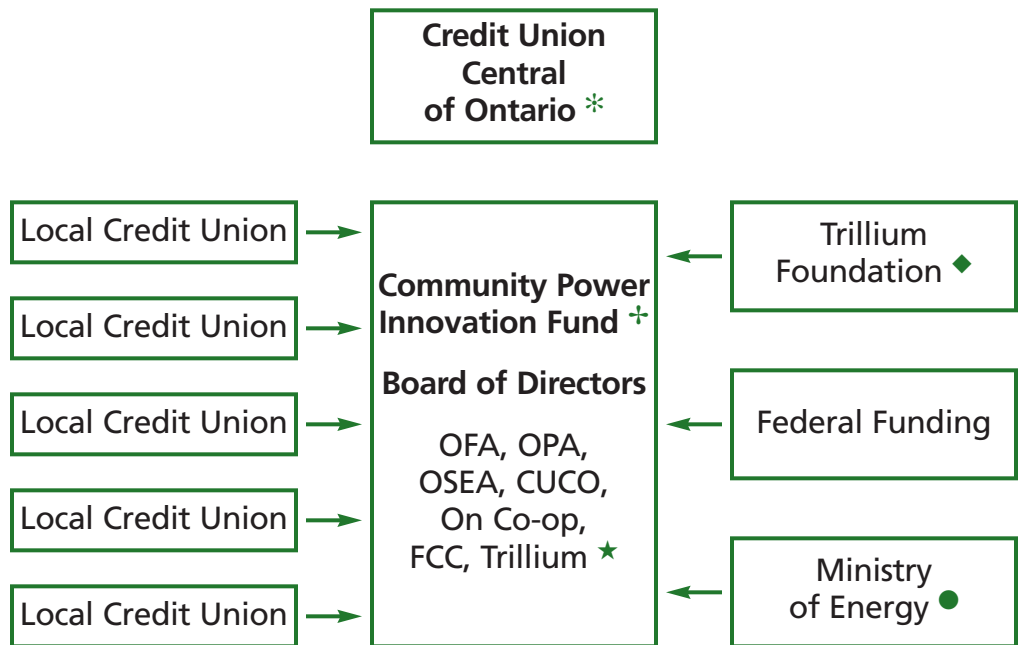
Governance

Proposed Board – Representative Organizations:

- Credit Union Central Ontario
- OSEA
- ON Coop
- Ontario Power Authority
- Farm Credit Canada
- Ontario Federation of Agriculture
- Trillium Foundation
- Industry Canada

Structure of the CPIF:

At this time OSEA is pursuing the idea of setting up the CPIF as a segregated fund of the Credit Union of Central Ontario.



NOTES:

- † The Community Power Innovation Fund is intended to be a segregated fund 10-20 million in size
- ♦ The Ontario Trillium Foundation will be approached to provide \$1 million/yr for a 5 year span
- * Local Credit Unions in Ontario would make contributions of \$100,000 to the fund
- ★ Board of Directors to be invited from the following organizations: Ontario Federation of Agriculture, Ontario Power Authority, Ontario Sustainable Energy Association, Credit Union Central of Ontario, Ontario Co-operative Association, Farm Credit Canada, Ontario Trillium Foundation
- The Ministry of Energy has discussed instituting an elective 'tick box' to be included on consumer electric bills that would donate a percentage of funds to the development of community power through the Community Power Innovation Fund

2. Community Small Business Investment Funds

Another opportunity to level the playing field and provide access to capital for small community-oriented developments is through a tax-advantaged mechanism such as the provincial Community Small Business Investment Funds (this program was closed last year). In doing so, the province can tap an entirely new segment of investors to help finance new renewable projects resulting in an increased pool of capital available for developments.

In the case of community-based initiatives it is essential to create a level playing field for attracting investors. Renewable energy projects are normally capital-intensive. Consequently, access to capital is critical to the success of these projects. However, the current conditions disadvantage these projects as well as individuals who wish to invest in them. The project is disadvantaged since other private developers can more readily access capital from labour-sponsored, or other funds while the community project cannot. Individuals in communities may wish to invest in a project that directly benefits their community but they are denied the tax benefits that are available to other investors through labour-sponsored funds. The creation of community-sponsored venture capital pools can facilitate the access to capital required to encourage renewable project development.

Currently, a significant source of venture capital for small and medium-sized businesses is through the Labour Sponsored Investment Funds (LSIF) and, until recently, Community Small Business Investment Funds (CSBIF) programs. These Funds are highly attractive to investors given their combination of tax credits, incentives and RRSP eligibility. For LSIFs, a \$5,000 investment would result in \$1,500 in provincial and federal tax credits along with a full income tax deduction of \$1,603 (if held in an RRSP; *assumes taxable income between \$39,001-69,509*), for a total tax savings of \$3,103. Similarly, the CSBIFs provided a cash incentive of 15%, and was to increase to 30%. Community-based green energy projects are perfectly aligned with these Fund objectives, since the financial benefits and jobs stay in the community.

The previous guidelines for these funds do not accommodate the unique needs of community-based green energy projects. There are four primary changes that would make the CSBIFs more suitable:

Minimum Investment Level – Currently, CSBIFs require a minimum individual investment of \$25,000. The concept of a community-based project is based on a larger pool of smaller everyday investors who typically invest between \$500-5,000. Reducing the minimum to \$500 would enable greater participation by communities and therefore provide more capital to the projects.

RRSP Eligibility – LSIFs are RRSP-eligible. However, the CSBIF itself is not directly RRSP-eligible. We recommend that CSBIFs become automatically RRSP eligible.

Maximum Size of Fund – Currently, CSBIFs are capped at \$10 million. However, even small renewable energy projects, such as a wind farm, require greater capital, normally between \$15-25 million. It is recommended that the maximum fund size be increased to \$25 million.

Maximum Investment In Any One Project – CSBIFs are restricted to a maximum investment in any one business of 20%. Coupled with the cap on the size of the fund this restricts the ability of these funds to support the level of capital required for a single project. It is recommended that a CSBIF be permitted to invest 100% of the funds raised in a single, specific community-based project. Experience has shown that communities can be galvanized around the idea of a project such as a wind farm and individuals are looking to invest via a single entity focused on the specific project.

While these recommendations have focused specifically on changes to the previous CSBIF Program, the thrust of the recommendations is not intended to be restricted to this program. Alternative policy incentives could be developed to deliver the same benefits.

APPENDIX B: STAKEHOLDERS CONSULTED IN POLICY DEVELOPMENT

The Ontario Sustainable Energy Association undertook an extensive stakeholder consultation process in the development of the proposed pilot program for Standard Offer Contracts. The following list summarizes the various participants who were consulted and provided input or comments related to this document.

Byron Leclair
Elyot Waller
Peter Ormond
ADEME (Agence de l'Environnement et de la Maîtrise de l'Énergie) — Bernard Chabot
American Council On Renewable Energy (ACORE)
— Michael Eckhart
American Wind Energy Association MidWest — John Dunlop
ANF Energy Solutions Inc — Aidan Foss
Arigna Fuels Ltd. — Michael Layden
ARISE Technologies Corporation — David Elzinga
Association of Power Producers of Ontario — Jake Brooks
Bodycote Materials Testing Canada Inc. — Tonya Dhir
Canadian Renewable Energy Association — Bill Eggerstson
Canadian Solar Industries Association — Rob McMonagle
Canadian Wind Energy Association — Robert Hornung
Center for Environmental Economic Development (CEED)
— Daniel Ihara
Christian Farmers Federation of Ontario — Elbert van Donkersgoed
Community Office for Resource Efficiency — Randy Udall
David Suzuki Foundation — Jose Etcheverry
Eco Perth — David Poch
Eole — Jean-Louis Chaumel
First Solar — Glenn Hamer
Gartner Lee Limited — Ramani Hariharan M.S., P.Eng.
GE Energy Power Generation — Derek Lim Soo
Generation Solar Renewable Energy Systems
— Simon Boone
Greenpeace Canada Climate Change Campaign
— Dave Martin
Hearthmakers Co-operative — Steve Sottile
Helimax — Marion Hill
Helix Synergy Inc. — Winton Dahlstrom
Hydro Quebec — Bernard Saulnier
Invenergy Wind Canada — Gary Pundsack
Lawrence Berkeley Laboratory — Mark Bolinger
Leader Wind Corp. — Jennifer Lugtigheid
Manitoba Energy Science and Technology — Shaun Loney
Minnesota Environmental Quality Board — Larry Hartman
National Farmers Union in Ontario — David Hahn
National Farmers Union in Ontario — Don Mills
Ontario Clean Air Alliance — Jack Gibbons
Ontario Federation of Agriculture — Ted Cowan
Ontario Ministry of Agriculture — Julian Reed
Ontario Ministry of Agriculture — Jake DeBruyn
Ontario Ministry of Energy — Perry Cecchini
Ontario Ministry of Energy — Ken Nakahara
Ontario Ministry of Energy — Bryan Young
Ontario Sustainable Energy Association — James Murphy
Ontario Sustainable Energy Association
— Deborah Doncaster
Ontario Sustainable Energy Association — Paul Gipe
Ontario Sustainable Energy Association
— Melinda Zytaruk
Ontario WaterPower Association — Paul Norris
Oregon Office of Energy — Carel DeWinkel
Phantom Electron — Leonard Allen
Phantom Electron — Joel Phair
Pollution Probe — Mary Pattenden
Pollution Probe — Martin Tampier
Port Albert Wind Farms, Ltd. — Philipp Andres
Positive Power — Jen Heneberry
Positive Power — John Norman
Renewable Energy Research Laboratory
— Jim Manwell
RePower Systems — Theodor Peters
Schneider Power — Thomas Schneider
Sierra Club of Canada — John Bennett
Sierra Club of Canada Legal Defence Fund
— Albert Koehl
Sierra Club du Canada National Office
— Shawn-Patrick Stensil
Sky Generation Inc. — Glen Estill
Solar Energy Society of Canada
Superior Renewable Energy Co-operative
— Charles Campbell
Superior Wind Energy — Claude Mindorff
Sustainable Energy Ireland — Paul Kellet
The Renewable Energy Co-operative North
— Robin Hughes
The Renewable Energy Co-operative North (TREC North)
— Anna Gibson
Toronto Environmental Alliance — Keith Stewart
Toronto Hydro Energy Services — Joyce McLean
Toronto Renewable Energy Co-operative — Ed Hale
Toronto Renewable Energy Co-operative
— David MacLeod
Toronto Renewable Energy Co-operative — David Timm
University of Birmingham — Dave Toke
University of Salzburg — Volkmar Lauber
University of Waterloo — Ian Rowlands
West Wind Development — Mark Bell
Windfall Ecology Centre — Brent Kopperson
Windfield Energy Inc. — Benjamin Strehler
Windustry Project — Lisa Daniels
Wisconsin Energy Bureau — Alex De Pillis
Worldwatch Institute — Janet Sawin
York University — Robert MacDonald
York University Schulich School of Business
— Karen Chiykowski



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