

# Peak Oil, Marginal Communities, & You

*How expensive energy will change community practice*

BY STEWART E. PERRY & DON MCNAIR

“Something that we’re going to have to get used to” – that’s how Prime Minister Steven Harper summed up his comments about high gasoline prices at a news conference in April. While he was at it, he might as well have added heating oil, diesel, and aviation fuel to the list. And if you think those are expensive, check out the alternatives.

We are indeed going to have to *get* used to and *stay* used to high energy prices given the likelihood of an ever-steepening rise in the price of oil over the next 20 years. Just how we “get” and “stay” that way are two of the most important things that people at work in CED and social economy should have on their minds right now. For many, or most, that does not appear to be the case.

Who can blame you? Most of the media coverage and analysis touching on this issue, commonly known as “Peak Oil,” has been devoted to the possibility, timing, or rate of such a rise, and more popularly, the catastrophic impact of a sustained spike in oil prices and what people should do to survive it. A longer running discussion of alternative fuel sources is more practical.

Still, it all provides precious little assistance to people who need to work out the implications of expensive oil for the mass of society, especially households that are already below average in income, health, sanitation, and safety. Strawbale

homes are not a likely option for your constituents; nor is “relocation to an area as least vulnerable ... as possible” to a drastic shortage of cheap oil, to quote one Prophet of Doom.

The latter dire suggestion is right in one respect. The end of cheap oil will surely close many of the economic doors that have been open to communities or that communities have pried open over the last 50 years. It’s important to figure out which doors those are. Just as surely, it’s important to surmise which doors will open, will open wider, or will remain closed in the course of such a change in our energy sources. Around Canada and

This article is based on the thesis that we have already reached that peak or will do so in the next 10 years.

True, other energy sources (coal, natural gas, wind, solar, geothermal, nuclear, biodiesel, and biogas) can take up some of the slack. But what they have to offer fades in the face of the enormously increasing oil demand from countries that heretofore have played a small part in the world market – China and India, principally. In all, the International Energy Agency estimates that the demand for oil will rise about 52% by 2025.

Won’t new sources of oil be discovered and developed? Won’t old sources become

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the United States a number of initiatives are already responding to that mix of opportunity and threat. They are harbingers of the future for people devoted to strong communities.

## Peak Oil Basics

“Peak Oil” is the point at which the production of oil fails to keep pace with the steady climb in the demand for oil. The first, most readily tapped half of the planet’s oil reserves having been exhausted, an ever-widening gap will appear between demand and supply the world over as the oil industry goes after the second half.

economically viable? Sure. The rise in per barrel price has finally made the low-quality oil sands of Alberta profitable. But processing that raw material is a very expensive proposition. Don’t expect any price relief there.

Even the extraction of oil from rich fields is becoming increasingly expensive. It used to take the energy equivalent of only one barrel of oil to extract, refine, and distribute the energy equivalent of 30 barrels of oil. Today that overall ratio is close to 1:4, and decreasing. In short, we are getting less and less bang for the bucks we spend on producing oil.

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Conservation measures instituted and enforced by the State can alleviate this. Japan, Sweden, and California are all demonstrating that governments can rein in the public and private consumption of fossil fuels and accelerate a switch-over to alternative energies. Unfortunately, we don't see that combination of political leadership and public readiness for change in Canada and the U.S. as a whole.

Researchers for the U.S. Department of Energy have recently concluded that, strict conservation measures notwithstanding, the transition to lower consumption levels cannot now be eased. The bump will be abrupt and hard.<sup>1</sup>

Peak Oil cannot be put off past 2015. Production levels may be maintained for another ten years thereafter while demand continues to grow. Then production itself will start to fall, and our 150-year love affair with oil will truly be over.

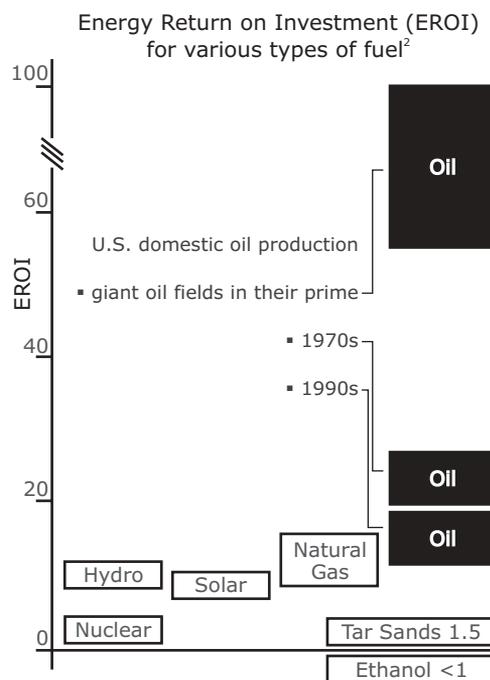
Consequently, we all face a future in which every product and service related to oil is going to change its basic place and meaning in our lives. For more industrialized countries like ours, that means big changes. Four stand out. In each case, there are organizations out there that have cued into them.

## A More Intricate & Expensive Energy Sector

The exceptional thing about oil is the tremendously advantageous Energy Return On Investment (EROI) it has

offered relative to other energy sources: perhaps as much as 60:1 or even 100:1 when giant oilfields are in their prime, falling to 23:1 for U.S. oil in the 1970s. Only in recent years have higher costs of production driven oil's EROI within the ballpark of its competitors, natural gas (15:1), and electricity generated by hydro (11:1), solar (10), and nuclear (4:1) means. (See diagram, "Energy Return on Investment.")

To put it another way, oil has generated an unprecedented energy surplus; the efforts of a small fraction of the workforce have been able to supply a substantial portion of the energy required for the colossal range of goods and services that we associate with



modernity. We are unlikely to see oil's like again, human inventiveness notwithstanding. Instead of a single energy source to replace oil, there will have to be a bundle of them, each of which will require more people and infrastructure than oil does – a lot more. As our EROI ratios indicate, if it took 1 BTU (British thermal unit) of energy to realize 23 BTUs from oil, it will take more than twice that investment to get the same energy from hydroelectricity or solar cells. If we can reduce that hypothetical demand of 23 BTUs through fuel efficiency, the less of an investment we are up against.

This spells massive expenditures. The strategic question is this: will we choose to spend that money on big, centralized renewable energy systems, or small, community-based ones? It is the conviction of the Ontario Sustainable Energy Association (OSEA) that the greatest benefit will be achieved through the latter. When it was founded four years ago, OSEA was largely an expression among environmentalists of the importance of reducing the demand for fossil fuels and nuclear energy. Now its 30 members focus on the opportunity for community revitalization that lies in contributions to the power grid from locally-controlled wind, solar, biogas, and hydro installations.

To make this happen, OSEA is pressing for action of three types. The first is a market mechanism that makes community investment in power a paying proposition. A huge step forward was made in this regard last March with Ontario's

<sup>1</sup> Robert Hirsch, Roger Bezdek, and Robert Wendling, "Peaking of World Oil production: Impacts, Mitigation, & Risk Management," prepared for the U.S. Department of Energy, February 2005. This is probably the best and latest source for a factual background on this issue.

<sup>2</sup> Based on Brian J. Fleay, "Energy Quality and Economic Effectiveness," November 2005, updated from February 2003, n.p. (14); Cutler J. Cleveland, Robert Costanza, Charles A. S. Hall, and Robert Kaufmann, "Energy and the U.S. Economy: A Biophysical Perspective," *Science*, Vol. 225, No. (August 31, 1984), p. 894; Barney Foran and Franzi Polde, "Future Dilemmas: Options to 2050 for Australia's population, technology, resources and environment," Report to the Department of Immigration and Multicultural and Indigenous Affairs (Canberra: CSIRO Sustainable Ecosystems, October 2002), pp. 167.

announcement of the Standard Offer Contract Program. It guarantees to small utilities a 20-year market in the provincial power grid for up to 10 megawatts annually at 11 cents (wind, biomass, hydro) or 42 cents per kilowatt hour (the more expensive solar). A community- or co-operatively-owned utility can expect to gross \$100-150,000 per megawatt annually and an 8-10% return on investment.

That investment can be daunting – say \$650,000 for a 10 megawatt project. So OSEA is also advocating the establishment of a \$10 million loan fund to help communities cover the costs of entry to the energy sector. Is it all worth it? Will consumers accept “subsidizing” small utilities through the public purse, instead of getting cheaper renewable energy from larger installations? Will consumers even get over the perception that local utilities are an eyesore or health risk?

When you factor in the employment opportunities, OSEA feels the argument for community-based energy becomes overwhelming. A 1997 study by the Pembina Institute estimated that every million dollars invested in conventional energy creates an average of 7.3 jobs (that is, 7.3 people employed full-time for one year). The same amount of money creates 12.2 jobs if it is invested in the renewable energy sector.<sup>3</sup> An Industry Canada study has estimated that this country will see 13,000 jobs in the wind energy sector by 2012. OSEA considers that a serious underestimate, more accurate to the employment that will be available in Ontario alone in installation, management, maintenance, and community education and co-ordination.

Training, then, is the third focus for OSEA's work: developing relationships with community colleges in order to ensure that their programs will be able to support a maximum number of job opportunities in the renewable energy sector.

Whatever the scale, if huge investments in infrastructure are to be made, the sooner we do it the better. Robert Kaufmann of the Center for Energy and Environmental Studies (Boston University) surmises that oil is currently



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making the transition to alternative energy sources easier. Its continuing energy surplus has left us with resources to apply to the transition. Once oil peaks however,

“constructing the large infrastructure for the alternative fuel will siphon large amounts of energy from the non-energy sectors of the economy at the very time that the total supply and energy surplus from oil is shrinking. In short, society has to pay the costs for the transition. We can pay them now, while we have oil in the bank, or we can pay them later, when our oil bank account is emptying.”<sup>4</sup>

In other words, the cost of energy is going up – way up – right across the board. This cost will be tempered by the fact that alternative energies will create more jobs, especially if the work is community-based. Fifteen years from now, the need to make the infrastructure investments that the members of OSEA promote will be much greater, and the money to apply to it much harder to come by.

## The Return of Distance

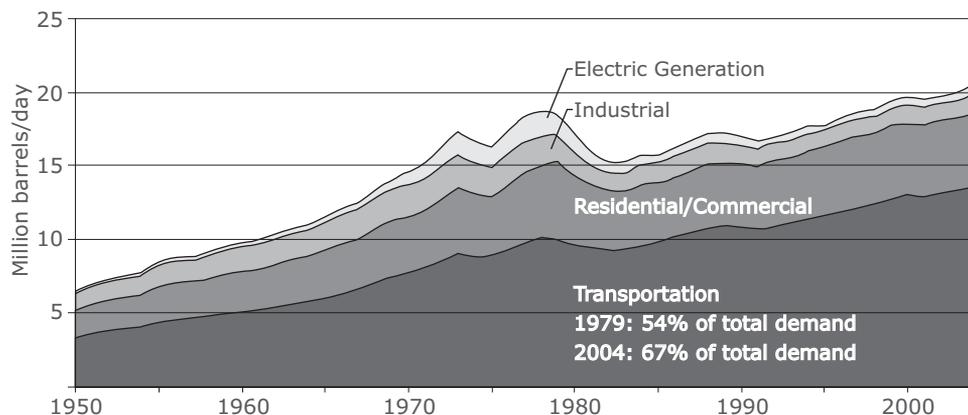
Oil plays a major role in every sector of the economy. U.S. figures show oil is meeting 43% of industrial and 21% of residential and commercial energy needs. But the sector most exposed to the rising price of oil is the one most favoured by its eminently compact, transportable nature. Transportation relies on oil and its derivatives for fully 96% of its energy in the U.S. Canada isn't likely to be much different.

<sup>3</sup> The same study estimated that an investment of \$1 million could create 28 jobs in solar thermal energy production, and a whopping 36.3 jobs in Canada's energy efficiency sector. Barbara Campbell and Andrew Pape. “Economic Development from Renewable Energy: Yukon Opportunities” (Drayton Valley, AB: Pembina Institute, October 1999), p. 6.

<sup>4</sup> Robert K. Kaufman, “Planning for the Peak,” World Watch. January 11, 2006. 24 April 2006 <<http://www.alternet.org/story/30654>>.

(above) The Exhibition Place turbine is a joint venture between Windshare (Toronto Renewable Energy Co-operative) and Toronto Hydro Energy Services. Photo courtesy of Melinda Zytaruk, Ontario Sustainable Energy Association.

U.S. Oil Demand by Sector 1950-2004<sup>5</sup>



*Transportation is where we will first feel the pinch of a sustained jump in oil prices, especially in activities in which oil makes up a particularly high fraction of the retail price. These are also the places where there are prospects for local & regional initiatives in the coming years.*

Oil is the means by which our way of life since 1945 has come to disregard geographical distance, permitting ever greater gaps to emerge between the producers and consumers of an overwhelming number of products and services. While other sectors have held their consumption of oil in check since the price shock of 1979-81 (after the Iranian Revolution), in transportation the appetite for oil has increased dramatically. (See diagram this page, "U.S. Oil Demand by Sector.")

That is also where most people and businesses will first feel the pinch of a sustained jump in oil prices, especially in commuting, food, and tourism – activities in which oil makes up a particularly high fraction of the retail price. These are also the places where there are prospects for local and regional initiatives in the coming years.

### Commuting

Car and truck transportation costs currently make up less of an American's personal

expenditures than they did 25 years ago (around 12%, down from 13.6%). Fuel represents a quarter of those costs. We can soon expect that trend to reverse itself and create an interest in transportation that offers much of the reliability and convenience of vehicle ownership at less cost.

The Co-operative Auto Network (CAN) is well poised to catch that wave. Incorporated in 1997, its members share cars in order to reduce the number of vehicles and greenhouse gas emissions in British Columbia's Lower Mainland. To join, people purchase a one-time refundable share of \$500. A monthly fee and usage fees based on time and distance traveled puts at their disposal 128 vehicles – cars, trucks, minivans, station wagons, and hybrids – for occasional, close-to-home trips in metropolitan Vancouver, Whistler, and central Vancouver Island. Members can reserve vehicles over the phone or on-line.

The economic benefits of membership are very real. In 2005, CAN members drove an average of 1,400 km per year (about one-tenth the average driver's total) and had costs that averaged \$125 per month – less than the cost of

insurance for most private car owners. CAN covers the costs of gas, maintenance, parking, and insurance. (The money you pay to tank up is credited to your account.) Members can claim their car costs as business expenses when members use the vehicle for work.

To make such generous terms work for such a small membership, major corporate allies have been crucial. Grants from VanCity Savings and The Cooperators covered many of CAN's start-up costs. Through an informal agreement with the private car rental firm, CAN members can rent vehicles at a discount for longer trips and vacations. A major benchmark was reached last year. A Vancouver City by-law now permits developers to purchase vehicles for the CAN fleet in order to reduce the number of parking stalls on a site (customarily, 1.2 stalls per unit).

CAN's membership is now 2,300 and is expected to reach 3,000 by next spring. Across Canada, the whole industry grew by 25% in 2005. To general manager, Tracy Axelsson, this is the way of the future. In her words, "I think that car sharing will be the dominant form of vehicle ownership in the next 50 years."

### Tourism

Whither tourism when gasoline goes to \$1.50/litre? When fuel surcharges drive plane fares up 20%? For retired or semi-retired people with no dependents and sizeable equity, it may be "recreation as usual." For those with less discretionary income, the prospect of low-fuel vacations could beckon.

The sort that are available in Haliburton County, three hours north of Toronto by car. Half the county is Crown Land wilderness; it also borders on Algonquin Provincial Park. The area is laced with public and private trails, rivers, and lakes and can draw lovers of wilderness recreation all year round – walkers, hikers, paddlers, riders, skiers, ice-climbers, as well as people who like to sit with a book on a quiet shoreline. The potential for conflict between their interests, and the businesses that serve them, is very great. So is the potential for public space to deteriorate.

<sup>5</sup> "U.S. Oil Demand by End-Use Sector, 1950-2004," Oil Market Basics (Washington, D.C.: Energy Information Administration). 7 May 2006 <[http://www.eia.doe.gov/pub/oil\\_gas/petroleum/analysis\\_publications/oil\\_market\\_basics/Dem\\_image\\_US\\_cons\\_sector.htm](http://www.eia.doe.gov/pub/oil_gas/petroleum/analysis_publications/oil_market_basics/Dem_image_US_cons_sector.htm)>.

For the last ten years, the Haliburton Highlands Trails and Tours Network (HHTTN) has arisen to reconcile these interests and promote the county as a tourist destination. A nonprofit association of associations, HHTTN helps hikers, campers, kayakers, mountain bikers, skiers, hoteliers, ATV operators, etc. co-ordinate their sales pitches. It also acts as their advocate, a collecting point for funding, a recruiter of volunteers for trail maintenance, and a cheerleader and educator for environmental responsibility. It's an example of tourism that, on account of a fusion of enterprise with a passionate commitment to the land, is authentically "community-based."

Still, it is a low-fuel, not a no-fuel experience that HHTTN's members offer. Climbing gas prices are bound to reshape their market, but how? The proximity of Canada's industrial heartland, with a large, affluent population long convinced of its entitlement to a vacation, will continue to work in the network's favour. The length and

frequency of that vacation can be expected to change first. Day trips may fall off and tours enjoy greater appeal, so there may be wisdom in developing more packages that blend wilderness experience, festivals, and arts and crafts into a 3-4 day stay. If that is case, the future of Haliburton's wilderness tourism lies in more work, more staff, and tighter co-ordination on the part of HHTTN – not less.

#### Food

Oil costs make up as much as 20% of the retail price of food. That's partly due to oil-based fertilizers, pesticides, industrial cleaning, and cooking processes. But it's primarily due to the fact that most of the food we eat has traveled an average of 2429 kms from where it was grown. Especially in perishable foods, we are paying a premium for a closely timed, multi-modal logistical chain that gets things speedily to a specific place at a specific time. In the next 5-10 years, we can expect major food producers to pass

mounting fuel surcharges from this chain on to retailers. This could steadily reduce the marginal price disadvantage of local fresh produce and stimulate a demand for greater variety and quantity in that produce.

One initiative positioned to gain from this market shift is the social enterprise SPUD, or "Small Potatoes Urban Delivery." SPUD is a grocery store organized as a conventional corporation with perhaps 25 investors, including founder Peter Van Seters (the biggest shareholder) and a nonprofit environmental organization. VanCity is the lender. Started in 1998 in Vancouver, SPUD has now expanded to Calgary, Victoria, and Seattle. It is currently staffed by 70 full-time equivalent employees and has about 6,000 regular customers. Annual sales are in the range of \$10 million.

The simple task of grocery shopping offers three major ways to reduce dependency upon oil and fossil fuels in general, and SPUD has a go at each of them.

First, SPUD is not a place you come and stroll through with your shopping cart. It home-delivers the groceries ordered by customers at its website. Each SPUD truck may deliver to 100 householders living in as little as a 10-block radius of each other. It uses gas to make the deliveries, but not nearly as much as the 80-100 cars that would otherwise be driven into supermarket parking lots.

Second, SPUD reduces dependence upon wholesale transportation of groceries by buying half its fresh foods from local producers. What's "local"? In SPUD's case, producers within an 800-km radius of each store – not an onerous limit (SPUD still buys plenty from Mexico and California) but a step in the right direction.

Finally, SPUD sells only organic produce and about half of all its other grocery items are also organic. It's the largest organic foods outlet in North America. Admittedly, many of these

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(left) One of the Co-operative Auto Network fleet. Photo courtesy of CAN.

# Collaboration

is more than coordination or partnership. It is a way of working that builds the will of a community to work together to bring about a desired future.



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organic foods are priced beyond the means of low-income households, and the distance over which organic Mediterranean olive oil or canned apricots have to travel rather compromises their status as “oil-free” foods. Even so, SPUD is clearly heading in the right direction. Many low-income community organizations are already selling and delivering market baskets to their residents. SPUD shows one way to upgrade these services into businesses. It demonstrates that even today, a socially responsible enterprise can anticipate the challenge of expensive energy and still realize solid returns.

Just how far or fast will distance reassert itself in the absence of cheap oil? It's important not to let our imaginations run away with us here. To forecast a decay of the international or transnational trade in manufactures and the firms that do it is premature, to say the least. Great economies of scale have been achieved in furniture, garments, equipment, leather, electronics, and appliances. Transportation can make up a very small portion of their retail price. (Under 5% in the cost of a \$100 pair of Indonesian runners.) Of course, for the host of goods nowadays that use synthetic polymers or fibres grown with the help of oil-based products, transportation cost will be compounded by a rising cost of raw materials.

Just how much of these rising costs will producers and retailers be able to pass on to consumers?

That's the big question, and you won't find the answer here. Let's say this much. In the generally more expensive shopping world we're coming to, a consumer's refusal to buy will likely be an expression of a more frugal lifestyle – not an opportunity for local or regional import substitution. Don't expect to see a blossoming of small enterprises to sell you shoes or furniture or tools or shirts. Niche businesses within the sectors that are exceptionally vulnerable to high fuel prices are a better bet. Shared transportation services, local recreation, and farmers markets come to mind. Beyond that circle, Big Guys could well remain the ones who can make the volumes and

deliver them at the prices that a lot of people will be able to afford.

## Crunch Time in Affordable Housing

Much more worthy of our attention than import substitution is the likely convergence of rising oil prices with the aging of the Canadian population. The great cohort of post-war babies that experienced an unusually high standard of living through its childhood, youth, and middle age is going to drop away at the same pace as the cheap energy that helped make that prosperity happen. Currently, one in eight Canadians is 65 years or older. By 2026, that ratio is projected to be one in five. In addition, “delayed marriage, postponement of children, and decreased fertility rates, coupled with increased life expectancy, mean that the average married couple may have more living parents than children.”<sup>6</sup>

These demographics, in combination with the ramifications of expensive energy, point to a very significant and troubling split in the way Canadians produce and consume, especially when it comes to housing.

Currently, over 70% of households led by seniors own their home, and most of those senior homeowners are mortgage-free. Some have bought the big, single-detached houses that continue to blossom in suburbia and that rely heavily on natural gas and natural gas-generated electricity for heat, air conditioning, and appliances. The needs of other seniors for less house but greater proximity to health and other services are helping to drive the growth in condominium starts.

The increasing cost of energy of all types can be expected to accelerate the latter trend towards density as the bulk of the baby-boomers enter retirement. The suburban houses getting built in the current, rip-roaring housing market are more energy-efficient than ever, but their energy savings are compromised by their size and appliances, not to mention the commute. Should natural gas go the way of oil – and there's good reason to think that it will – even those savings will

evaporate. Much of today's new housing will surely devalue as a consequence.

So in 10 years, and monumentally in 20 years, we may well be looking at a triple dilemma. There will be an aging population with a lot of equity and few liabilities that is reasonably insulated from rising energy and rising prices on consumer goods. The major sources of population growth will likely be new Canadians and Aboriginals who will have little of that security and nothing to inherit from baby-boomer parents. Finally, a significant portion of the housing stock that one would expect to be middle-aged will in fact be obsolete. This convergence will make plenty of room for social and economic distress and discord.

There are also opportunities here. Businesses based on energy auditing and retrofitting of different elements of existing houses, whether it's their sheathing, flooring, insulation, lighting, or heating system, have real prospects for scale.

That's the focus of the work of Edmonton-based Carbon Busters. Through energy audits of buildings, specific recommendations for a range of possible energy savings, and customized training programs, it is developing quite a record for getting clients to make energy efficiency part of their institutional and corporate way of life. The thin edge of this wedge is Carbon Busters' ability scrupulously to project and then track savings from no-cost and low-cost changes of equipment and habit, as well as from more expensive design and retrofitting.

Carbon Buster customer Horizon School District, with 11 participating schools, can track a 15% savings in its power costs over two years. Add to that reductions in heating and utility costs, and Horizon saved nearly \$75,000 over that period. Horizon's program was self-financed; that is, their contract stipulated payment of a certain percentage of documented savings. (Carbon Busters also makes itself available on a pay-per-service basis.) In about five years, Carbon Busters' work has saved its Canadian clients over \$1 million and Canada's air over 9,000 metric tonnes in CO<sub>2</sub> emissions.<sup>7</sup>

A greater opportunity by far lies in devising ways to make energy-efficient housing affordable to people of low income, who are already severely pressed by rising utility costs. This is not something that private builders or any of the growing number of manufacturers of energy-efficient products or systems can accomplish on their own. They are too divorced from the complex of factors that can be associated with low income – low skills, disability, ill-health, etc. Moreover, on their own, deteriorating towns and neighbourhoods haven't the money to pay them. There is "need" aplenty. But there is no market.

Required are nonprofit housing organizations that invent ways to combine their intimate knowledge of, and commitment to, a group or neighbourhood with a) public and institutional resources, and with b) private expertise and products. These nonprofits are developers of a different stripe.

North End Housing Project (NEHP) is one. It acquires and rehabilitates homes

in Winnipeg's North End, where neighbourhoods have suffered increasingly from crime and neglect over the last 25 years. NEHP operates the homes as long-term rentals or sells them outright at a subsidized price to families. Realtors help families apply for the mortgage and the grants available to first-time homebuyers. That variation in acquisition options is part of the low-income housing equation.

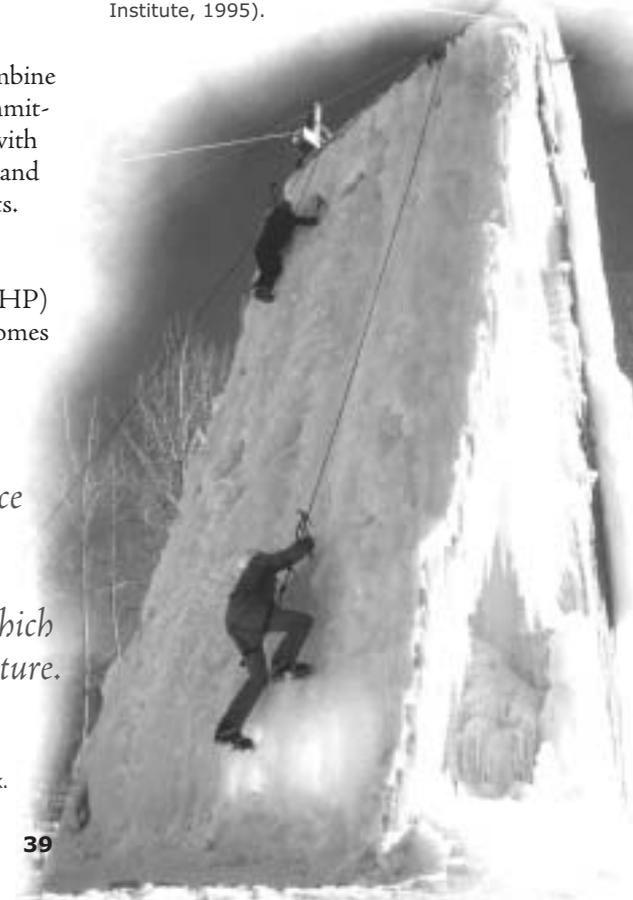
Another part is to protect occupants from mounting energy costs. Working with a neighbourhood association, funding from all three levels of government, and technical assistance from Manitoba Hydro (imagine the administrative complexity), NEHP undertook the development of nine infill housing

<sup>6</sup> Cara Williams, "The Sandwich Generation," Canadian Social Trends, Summer 2005, #77, p. 16.

<sup>7</sup> For an up-to-date accounting of the energy efficiency of a standard basket of household items, including vehicle, lights, refrigeration, and heating, see Godo Stoyke, *The Carbon Buster's Home Energy Handbook* (Gabriola Island, B.C.: New Society, 2006). It's a great complement to the method of community-wide energy accounting presented in Alice Hubbard and Clay Fong, *Community Energy Workbook* (Snowmass, Col.: Rocky Mountain Institute, 1995).

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(right) Ice-climbing in Haliburton County. Photo courtesy of Haliburton Highlands Trails and Tours Network.



units in 2001-02. Designs specifying energy efficient, low maintenance homes, in tune with the character of the neighbourhood, and adaptable for people with disabilities were the basis of the call for tender. The successful bidder, a local builder, worked closely with the neighbourhood groups to achieve R2000-quality construction at affordable prices. (Four of the units were rental duplexes using geothermal heat pumps. It was "state of the art," but has proven beyond the ability of occupants to maintain.)

More recently, NEHP has brought together a similar alliance to construct a rental townhouse for single women and single-parent families that includes three studio units, four 1-bedroom units, and four 2-bedroom units. There is also a community kitchen and indoor meeting

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space. That's a third part: allowing for the diverse social needs of the residents.

Errors, setbacks, and a shortage of money are rife in this work. It demands the outlook of an entrepreneur as well as an advocate. It also demands managerial and financial acumen of a kind that many nonprofits don't have and that current government programs are not helping them to build. Nevertheless, nonprofits like NEHP are far, far in advance of private developers cued to the current tastes of the middle- and upper-income consumer. Within the straitened circumstances of impoverished

neighbourhoods, such nonprofits are probing the limits of the possible in terms of housing design, management, efficiency, affordability, and replicability. Essentially, they are describing the means by which we will meet a far more widespread housing crunch in the near future.

## **The Need to Act Collectively**

The magnitude of the change before us has compelled some to contemplate a long-term, comprehensive plan of action reminiscent of the CED strategies commonly recommended to deteriorating towns and neighbourhoods. People try to envisage systematic action that will steadily reorient the entire economy to work independently of imported energy of any kind.

That's a very tall order. First, it requires the same sort of patient, thoughtful mobilization of people from a variety of walks of life that we commonly apply to immediate threats, like the closure of a major employer or the opening of a freeway. In this case, the full dimensions of the energy crunch may not be apparent for perhaps ten years. It may be exceedingly difficult to get and maintain multisectoral collaboration around a vision of a fundamentally different way of life for everybody.

Second, even given some broad level of agreement, it will be tough to discern what specific action might make the most

meaningful difference. Peak Oil's Prophets of Doom do nobody any favour in this regard. Their warnings of the implosion of capitalism, globalization, and population are good for getting attention, but offer people little guidance for practical, collective action.

In light of this, the halting steps taken in the last year by some citizens and community organizations in the northern California town of Willits are worthy of note. Convinced that Peak Oil endangers their way of life ... they have decided to change their way of life.

Willits Economic Localization (WELL) is the name assumed by neighbours who first coalesced around a series of information nights in this town of 5,300. Having identified 14 areas of importance to the community's survival, they formed working groups to research and recommend action in six areas: energy, food, shelter, water, health and wellness, and social organization.

The energy group undertook to quantify Willits' energy dependence by comparing total energy consumption with total imports. They discovered that the town imports more than 1,000 megawatt hours of propane, firewood, electricity, natural gas, and diesel and gasoline daily. (The latter is the biggest portion, for another 10,000 people live in Willits' environs, and the average resident drives 45 kms a day.) That works out to US\$30 million spent on imported energy annually, 56% of that for transportation. Every megawatt chipped from that total through energy conservation or local energy production would keep \$30,000 in Willits. The working group recommended that the town aim over the long term to halve its current total energy consumption, and to aim for complete independence of outside energy sources by 2010.

The food working group conducted a similar audit and found that neither of the local supermarkets use local suppliers. The town was wholly dependent on food imports despite plentiful farmland in the vicinity. Using as a baseline the 160 member households of a local initiative in community-supported agriculture, the working group calculated how great an

acreage would be required to supply 15,000 people with vegetables (1,733), and then multiplied that by two or three to allow for meat and dairy. WELL's other working groups are undertaking similar research and planning (and, in a curious reversal, are having to find outside sources to fund this work).

For a more substantial example of collective action against fossil fuel dependence, we have to go overseas. Prime Minister Göran Persson of Sweden has created a commission to advise him how this country of nine million could eliminate its dependence on oil by 2020.

Sweden has been making great strides in this direction for over a generation, since the oil shock of the late 1970s. Almost all its electricity is already nuclear and hydro generated; space heating is by geothermal energy or recycled heat. In 2003, only 32% of its energy came from oil, down from 77% in 1970. Huge amounts of boreal forest enable Swedes to burn tons of biomass to generate power for industrial and residential usage.

The Swedish government has also long made use of aggregated public procurement to guide industrial innovation. In the years 1990–2000 it offered domestic and foreign firms what Amory Lovins calls "Golden Carrots" to promote the creation of a wide range of energy-saving products. Products that met advanced specifications were guaranteed a certain market in Sweden for a certain

number of years and at a certain minimum price. Sweden has required that government agencies buy efficient fuel-flexible cars. This will serve to back up the government's suggestion to the private sector that half of the country's big filling stations offer at least one renewable fuel by 2008. Many larger cities offer drivers of hybrids and flexible-fuel vehicles free parking as well as exemption from congestion charges. Health and library services can receive grants to convert from oil use.

Sweden's Commission on Oil Dependency is just the next in this long series of steps. In this case, the target boils down to ensuring that for every use of fossil fuel, there is an affordable, effective, and renewable alternative. The Commission will report this summer. Some environmentalists are skeptical about the realism and the sincerity of its mandate. For the rest of us, the Swedes' record for using their collective clout to focus industrial investment and to reshape private consumption gives an indication of a daunting but necessary path we have hardly even begun to take.

Of this much we in North America can be sure. The shift in the economy will hit the most vulnerable the hardest. Prices will rise. Wages and salaries and the allowances of the unemployed will not keep up. Governments will be short of cash, but under great pressure to spend. Marginalized communities of North America will be even more at risk than they are now.

It is all the more important for these communities to see in these circumstances new ways of life and work. Demand will grow for labour, investment, and innovation in the energy sector generally and for the services that support energy efficiency. Some goods mass-produced far away will no longer enjoy the great advantage they once knew over low-volume, locally produced ones. The ability to channel diverse interests and resources into work that adds real value to people's lives will carry an even higher premium.

In the balance, more transactions will take place among people who live and work closer to each other and among neighbouring communities. The national economy will become more clearly a matter of intra-community and inter-community transactions, not the national and international transactions that currently absorb the attention of economists. While our communities' ways of life will be sorely tried, they will become more intense and important than they have been for generations. 

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