



PEOPLE TECHNOLOGY INNOVATION

V2.2 2009

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The Right Tool at the Right Time



28



contents



50



Cover

Photo by Jason Ness

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Mousy Brown's

↑ COVER

- 28 No car, no furnace, no problem**
How one Edmonton family's commitment to an energy-frugal life inspired their dream home.
- 33 Zero in**
Get inside the house that will produce as much energy as it consumes over the course of a year.
- 34 Meet the builders**
The plumber, the carpenter, the draftsman - these three are among the dozen or so NAIT alumni and apprentices constructing a net zero energy house.
- 36 8 ways you can save at home**
Cover stories by Cheryl Mahaffy, Diane Bégin-Croft and Kristen Vernon

FEATURES

- 20 Innovate → Q & A**
Our home and native land
Hugh Seaton talks about applied research being done to help industry meet new land reclamation standards.
By Mike Sadava
- 42 People → Alumnus**
A novel career
Author Dave Hugelschaffer draws from his experience as a firefighter and forester to write a compelling CSI-style fiction series.
By Mike Sadava
- 48 Technique**
Small change, big results
4 steps to starting a micro-giving group.
By Kristen Vernon

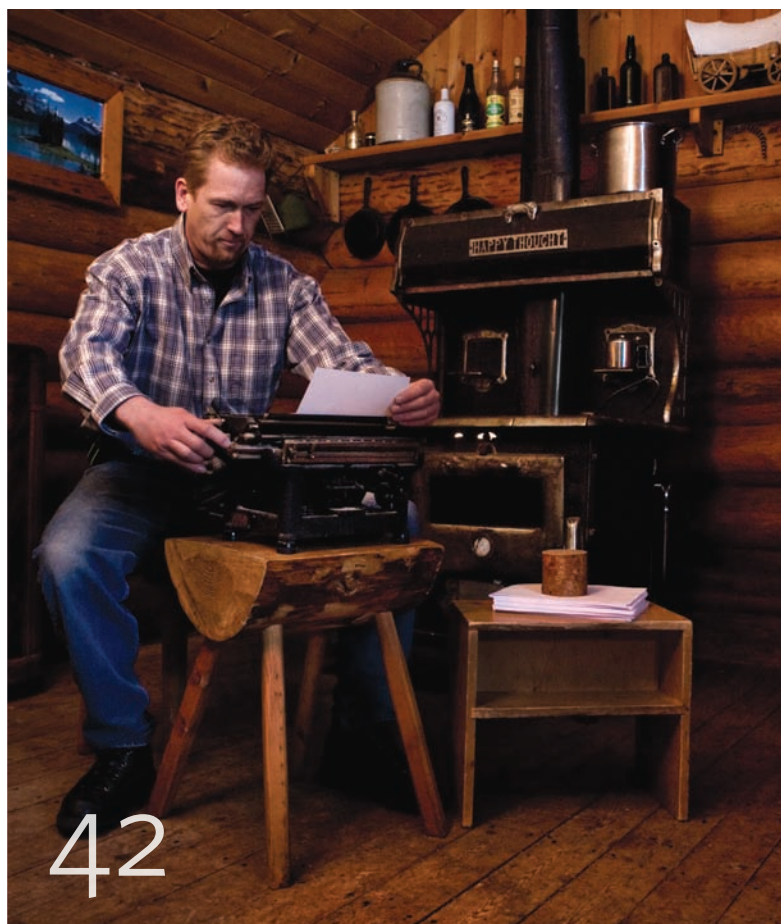
DEPARTMENTS

UPFRONT

- 6 Contributors**
- 7 Editor's note**
- 7 Letters**
- 8 President's connections**
- 9 Newsbytes**

TECHNOFILE

- 11 Gadgets**
- 11 Where to recycle electronics**
- 12 Digital invaders**
Network security experts John Zabiuk and Scott Empson on how to protect your computer from the most common threats.
- 14 Simulation**
Poolside rescue
Paramedic students perform an emergency pediatric resuscitation.



INNOVATE

- 16 Crime fighter**
Stephane Contré's predictive software helps put security forces where they're needed, when they're needed.
- 23 Ask an expert**
From idea to marketplace
3 things to consider when developing a product or service.

GREENSCAPE

- 24 Zootopia**
Student team helps the Edmonton zoo reduce its environmental footprint.

NAITSPACES

- 26 Arena**
Great save!
A \$200,000 retrofit to the arena has reduced electricity consumption by 40 per cent.

PEOPLE

- 38 Entrepreneur**
A promise to a tree
Kate Zmurchyk's conversation with a stately poplar planted the seed for a clothing company that co-ordinates a preservation message with sustainable business practices.

- 45 Reading room**
3 questions; 6 people

CULINAIT

- 50 Profile**
Perfection is impossible, excellence is not
Celeb chef Rob Feenie shares his mantra with students as the first-ever Hokanson Chef in Residence.
- 53 Recipe**
Scallop carpaccio

- 54 À la carte**
Knife skills 101
Get a grip: chef Rob Feenie offers tips and techniques to help sharpen your cooking skills.

POSTSCRIPTS

- 57 Click**
What's new at techlifemag.ca
- 58 Rewind**
Mobile evolution
A brief lesson on the genesis of the cellphone.

IN THE NEXT ISSUE,
FALL 2009 (V3.1)

→ Curler Kevin Martin and coach Jules Owchar on the road to the Olympics

→ Whistler-based Ryley Thiessen on planning mountain resorts around the world

COMING UP AT
TECHLIFEMAG.CA OVER
THE NEXT FEW MONTHS

→ War driving: how to protect your wireless connection

→ A video primer on micro-blogging site Twitter



PAGE → 50

Amy Bizovie picked up a camera when she was 18 and hasn't looked back. She enrolled in NAIT's Photographic Technology program and, soon after graduating last year, joined NAIT as a staff photographer for a six-month contract. The job allowed Bizovie to take the bus to work – she takes it almost everywhere – which is not only better for the environment than driving her SUV, but also allows her to leisurely sip her morning coffee from her travel mug. More importantly, the stint at NAIT gave Bizovie the rewarding and challenging experience of photographing celebrity chef Rob Feenie.



PAGE → 50

Jennifer Cockrill-King is an Edmonton-based food writer whose work has appeared in newspapers and magazines such as the *Chicago Sun-Times*, *Maclean's*, *Canadian Geographic* and the *National Post*. She jumped at the chance to shadow Hokanson Chef in Residence Rob Feenie, eager to pick up tips and techniques from one of Canada's top chefs. ("Great food is not about complicating things; it's about doing little tiny things very well!") Cockrill-King has been encouraging Albertans to buy local food and drink and to eat at locally owned, independent restaurants for a number of years as an active member of Slow Food Edmonton and as the co-publisher of a culinary magazine and website at edibleprairie.ca.



PAGE → 28

In 1996, **Cheryl Mahaffy** launched the freelance business Words that Sing with the goal of writing about things that matter. She was pleased to interview Conrad Nobert and Rechel Amores, the owners of Edmonton's second net zero energy home, whose dedication to the planet is nothing short of inspirational. No stranger to environmental topics, Mahaffy is putting the final touches on the second edition of *Agora Borealis: Engaging in Sustainable Architecture* with LEED-accredited architect Vivian Manasc. Her work appears in the anthologies *Big Enough Dreams*, *Edmonton on Location*, *Outside of Ordinary* and numerous magazines. She also writes for a broad range of non-profit, civic and corporate clients.



PAGES → 20 + 42

Mike Sadava has been a journalist for nearly 30 years. Much of that time was spent with the *Edmonton Journal*, where he covered everything from crime to politics, and wrote a column called Sadava on Saturday. Forestry was a common theme for his contributions to this issue of *techlife*, with a story on applied research into reclamation in the boreal forest and a profile of forester and author Dave Hugelschaffer. Sadava writes for a variety of publications and can occasionally be seen plucking his mandolin or guitar in some of Edmonton's finest clubs. Although he lives in a draughty house that could only be described as R-zero, he bikes as much as possible and grows a vegetable garden every summer.



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Techlife awarded

Alberta Magazine Publishers Association – Runner-up, Best Cover (V2.1)

Canadian Council for the Advancement of Education – Silver, Best Magazine

Council for the Advancement and Support of Education, District VIII – Silver, Periodicals; Gold, Photo (NAIT Sandvik Coromont Centre for Machinist Technology, V1.2); Silver, Photo (On the Brink of Big, V2.1); Silver, Writing (Frazz Dazzler and the Sunny Day Delay, V1.2)

"IT'S ABOUT PEOPLE MAKING A COMMITMENT TO THE PLANET . . . IN THEIR OWN WAY."

When we first saw our home on the market, in the summer of 1996, the realtor informed us that it was an energy-efficient house. It has a high-efficiency furnace, thicker walls with more insulation, triple-glazed windows and it's airtight, she said. What we saw was a well-built house with lots of windows, in a great location in Edmonton's river valley.

It wasn't until we looked closer and saw the R2000 certificate on the wall of the utility room, next to something called a heat recovery ventilator, that we realized this house really was different.

Thirteen years later my husband and I have learned about the benefits of owning a house designed to use less energy. Our energy miser has saved us 30 per cent on our heating bills while giving us good indoor air quality and, by using less energy, produces fewer greenhouse gases. Not to mention the passive solar heating provided by those banks of windows that caught our eye in the first place.

Fast forward to 2009 and – with the help of several NAIT alumni and apprentices – the same builder has taken energy efficiency to new heights with homeowners Conrad Nobert and Rechel Amores. Their central Edmonton home (p. 28) isn't even connected to a gas line and will contribute more electricity to the grid than it consumes.

Sure, Nobert and Amores' commitment to going green is extraordinary, but the technology is there for everyone to take advantage of and may not be as expensive as you think. Nobert says they spent \$20,000 to achieve 85 per cent of their home's energy savings.

The stories in this issue show people making a commitment to the planet in varying degrees, in their own way. Pas Paskaran (p. 48) is using micro-giving to change lives, while Stephane Contré (p. 16) has developed software to help make the world a safer place.

Here at *techlife*, we choose to print the magazine (along with other NAIT publications) on FSC-certified paper and give readers the choice of electronic over print (email circulation@techlifemag.ca).

Send us a note and tell us what you're doing to help look after the planet.

Sherri Krastel, Editor
editor@techlifemag.ca

LETTERS

EMAIL EDITOR@TECHLIFEMAG.CA OR MAIL YOUR COMMENTS TO SHERRI KRASTEL, EDITOR, "TECHLIFE" MAGAZINE, 11762 – 106 ST. NW, EDMONTON, AB T5G 2R1

Hopefully I will never have to change a tire, but if I do now I'll know what to do (Learn to Change a Tire, techlifemag.ca/tirechange.htm, February 2009)! Thanks for sharing your magazine – I love it!

Sharon Hart

Microsoft Canada Co.
Western Region Academic
Account Manager

I thought the magazine looked terrific – very slick and good idea material for me. I loved the story about Daniele Costa (A Kitchen of his Own, p. 58, V2.1, fall 2008) and I'm going to try his recipe. I run into NAIT chefs practically daily on this beat and we are lucky to have such an excellent resource in this food community.

Liane Faulder

Edmonton Journal
Food Columnist

Editor's note: Get more technology for your life delivered to your inbox every two months. Subscribe to our e-newsletter at techlifemag.ca/subscribe.htm.

WE WANT TO HEAR FROM YOU

NAIT FAMILY TREE

Has more than one generation of your family attended NAIT? Please send us your NAIT family tree for possible inclusion in an upcoming issue of *techlife*. Be sure to identify how everyone in your family tree is connected to you, and include programs and grad years for everyone, if known.

Email your NAIT family tree to editor@techlifemag.ca or send it by mail to Sherri Krastel, Editor, *techlife* magazine, 11762 – 106 St. NW, Edmonton, AB T5G 2R1.



W.A. SAM SHAW, PhD, PRESIDENT AND CEO

EDUCATION FOR A GREENER WORLD

Developing and promoting sustainable practices isn't just the right thing to do, it's the smart thing to do. And here at NAIT, we are working to promote sustainable practices while maintaining our commitment to high quality, industry-relevant technical training.

We have established a sustainability strategy, policy and website and were among the first technical institutes in Canada to hire a full-time sustainability officer. NAIT's academic plan commits us to demonstrating leadership in economic, environmental and social responsibility. This translates into education for the real world – where sustainable practices are an imperative for business, industry and society as a whole.

NAIT's approach ensures our students have the knowledge and skills they need to make a difference in their workplaces and communities.

For example, a team of Bachelor of Technology students is working with the Edmonton zoo to help make their operations more sustainable (Zootopia, p. 24) and the Landscape Architectural Technology students created a display for the spring Edmonton Home and Garden Show that integrated a variety of sustainable elements, including rooftop gardens, rain barrels, a natural

playground and solar panels. Not only do these projects highlight the importance of more sustainable lifestyles, they represent NAIT's efforts to integrate sustainable practices in the classroom, lab, and all other aspects of the institute.

As you read through the magazine, I encourage you to think about sustainability in your own life. I hope you find inspiration in the stories of people who have been working hard to go green – in their businesses, classrooms, workplaces and homes.

Whether through people, technology or innovation, NAIT is committed to educated, skilled and successful learners. NAIT is striving for green – as an organization, member of the community and global player.

Send me a note, I'd like to hear your thoughts on sustainability in technical education.

A handwritten signature in black ink, appearing to read 'W.A. Shaw', with a long horizontal line extending to the right.

W.A. Sam Shaw, PhD
President and CEO
sams@nait.ca

15 HOURS OF SLEEP A DAY

A pilot project to put 1,700 computers into sleep mode after an hour of inactivity is expected to save as much as \$13,500 a year and reduce greenhouse gas emissions by an amount equivalent to removing 18 passenger vehicles from the road for a year.

The institute's environment committee, ecoNAIT, and its Department of Information Services teamed up last fall to install Energy Star power management software on the computers in the trial. The program has increased each computer's downtime by an average of 3.36 hours a day for a total of 15 hours.

The computer downtime was tracked by software developed by staffers Matthew Saunders and Conrad Nobert.

This summer, the department will deploy the software on approximately 1,700 additional lab and student-use computers.

- KRISTEN VERNON

THE OOKS HAVE LANDED – A NEW LOOK

An assertive, bold and competitive symbol, the updated Oaks logo incorporates the look and feel of NAIT's new corporate brand. The ookpik (Inuit word for snowy owl) was adopted in 1964 as a symbol

for NAIT's athletics programs and later became the logo.

The redesign is part of a wider initiative to raise the profile of NAIT's 12 varsity athletic programs. "The new-look Oaks logo will be an important part of

our overall strategy to gain increased recognition and success in the competitive world of sports," says Linda Henderson, director of NAIT Athletics and Recreation.

- DONOVAN FRANCIS



The newest Oaks logo was launched Jan. 31, 2009 at a regular season men's hockey game between NAIT and the MacEwan Griffins. The Oaks won 7-0.

NAIT GOES SMOKE FREE

To promote a healthy, safe, clean and respectful learning environment, all NAIT campuses will become smoke-free on July 1, making the institute among the first in Alberta to ban smoking. Smoking will be prohibited in the institute's buildings and vehicles, as well as on any NAIT property.

The ban will bring to an end the existing policy, which allows smoking in designated locations.

- DONOVAN FRANCIS

THE INSTITUTE PILOTS ECO-BUILDING COURSE

NAIT is among 10 universities, colleges and technical institutes – and the only one in Alberta – to offer the post-secondary level Canada Green Building Council (CaGBC) course on the LEED (Leadership in Energy and Environmental Design) green building rating system.

The pilot course, Building Green with LEED: LEED Canada for New Construction 1.0 Rating System, is being taught by NAIT alumna Stephani Carter, a principal in EcoAmmo, where she is an independent LEED facilitator.

The course is essentially an exam preparation class for anyone interested in becoming a LEED Accredited Professional. The first offering runs June 20 to July 14; a second course runs from Oct. 13 to Dec 1.

CaGBC implements the LEED rating system, a third-party certification program and international benchmark for green building design, construction and operation.

www.nait.ca/continuingeducation

- KRISTEN VERNON

WEB EXTRA

Read the profile of Stephani Carter (A Breath of Fresh Air, p. 35, V1.2, 2008) and watch the video as Carter explains what to look for when selecting green building products.

techlifemag.ca/greening.htm

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GADGETS

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DO YOUR ELECTRONICS KEEP THE EARTH IN MIND?

Looking for greener gadgets? Do your research before you buy. Consider manufacturers' environmental and energy policies, use of recyclable materials, energy efficiency (look for the Energy Star label), take-back programs and steps to phase out hazardous substances (including PVC plastic and brominated flame retardants).

These electronics and more are available at the NAIT Tech Store or online at www.nait.ca/onlinestore.

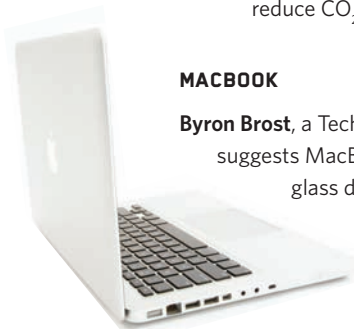
TOSHIBA REGZA TV

Tech Store customer service clerk **Tunc Gunes** suggests Toshiba's REGZA TV for meeting stringent new Energy Star TV standards that apply not only when in standby mode, but also when in use, as well as for Toshiba's commitment to reduce CO₂ emissions from operations and to increase use of renewable energy.



MACBOOK

Byron Brost, a Tech Store customer service clerk who owns a MacBook Pro, suggests MacBook laptops for their recyclable aluminum casing and glass display, energy efficiency – these laptops meet Energy Star requirements – and elimination of mercury, arsenic, PVC and brominated flame retardants. He also notes their minimal packaging and Apple's environmental commitment.



HAND-CRANK FLASHLIGHT AND RADIO

For a gadget that requires just a bit of elbow grease to power, **Mike Paul** (PAGE → 34) founder of Up-To-Code Mechanical recommends a hand-crank flashlight and radio. "Handy to have in your toolbox or garage, it lasts surprisingly long," he says. While he's never timed exactly how long – the radio lasts longer than the light, and it doesn't do as well if it's been in the truck in -20C weather – he's never had a sore arm from repeated cranking. Paul uses Duracell model kp028; other brands, such as the Woods radio and flashlight featured here, are also solar-powered.



THE ENERGY DETECTIVE

"As homeowners, we are generally blind to how much energy we use. We know we should try to cut down, but the concept is vague," says **Conrad Nobert** (PAGE → 28), NAIT Computer Systems Technology instructor and co-owner of the Mill Creek

Net Zero Home. To get a handle on how much electricity you're using – and what it costs – Nobert recommends a little device called The Energy Detective. "People who know their consumption cut back by 10 to 15 per cent, easily paying for this \$150 gadget in about a year."

Where to recycle electronics

In Canada, over a third of households have computers and other electronics that are no longer in use. If not disposed of properly, hazardous substances such as mercury, lead and cadmium could be released into the environment.

In order to reduce e-waste in our landfills, various organizations offer reuse and recycling programs.

albertarecycling.ca

TVs, computer accessories, monitors, printers, laptops and notebooks.

call2recycle.org

Cellphones and rechargeable batteries from cordless electronics.

eco-cell.org

Cellphones, accessories and batteries collected for environmental fundraisers.

edmonton.ca/reuse

All types of items still in good condition, to be donated to groups and individuals.

education.gov.ab.ca/cfs

Computers to be refurbished for schools.

era.ca

All types of IT and electronics, excluding TVs and microwaves.

recyclemycell.ca

Cellphones, smartphones, wireless PDAs, batteries and pagers.

recyclinghotline.ca or 1.800.463.6326

Search by material to recycle. Lists all types of products, including alkaline batteries and CDs/DVDs.

Some manufacturers and retail outlets also have recycling programs for electronics and accessories.

– DIANE BÉGIN-CROFT

DIGITAL INVADERS



STORY BY
KRISTEN VERNON
ILLUSTRATION BY
**DEBRA BACHMAN
SMITH**

WEB EXTRA

What's your risk for falling
victim to online fraud?

lookstoogoodtobetrue.com/tests.aspx

It's not high profile hacks like the breach at the parent company of Canadian stores Winners and HomeSense, which compromised millions of credit and debit card accounts, or the hijacking of the accounts belonging to U.S. President Barack Obama or CNN anchor Rick Sanchez on the micro-blogging site Twitter, that pose the most common threats to companies and their computers, say Bachelor of Applied Information Systems Technology instructor John Zabiuk and associate chair Scott Empson. Rather, it's the things employees do on their personal computers. And just about anyone, from the most basic to the most tech-savvy user, is vulnerable, says Zabiuk, who teaches an ethical hacking course that equips students with the skills needed to protect companies.

So, what exactly are the most common threats? And how can you protect your computer? Zabiuk and Empson, themselves NAIT grads, explain.

THREAT: SOCIAL ENGINEERING

These schemes are designed to manipulate you into divulging personal information or performing certain actions. They range from the "Dear customer" email that appears to come from a bank or eBay, seeking login information and asking you to change your password, to a phone call to convince you to give up certain information.

The difficulty, says Empson, is that they look and sound real. "As unbelievable as it sounds, people fall for it everyday," Zabiuk says.

"Hackers wouldn't do it if it didn't work."

PROTECT YOURSELF

"Your bank will never ask you for personal information in an email," Empson says. Not sure if it's legitimate? Call to ask. "If you're suspicious about an email, don't click on anything in the email."

THREAT: TROJANS

Named for the Trojan horse of Greek mythology, Trojans are harmful programs that can sneak undetected onto your computer along with music, video or software downloads. Once on your computer, they can perform malicious tasks, such as turning your computer into a server to send spam or using your computer to store child pornography.

ACTIVITIES THAT PUT YOUR COMPUTER AT RISK

Downloading files – music, video or software – that you'd normally be expected to pay for, can put your computer at risk. Want Microsoft Office, but don't want to pay for the licence? Downloaded the movie *Dark Knight* three days after it was released in theatres? "If it sounds too good to be true, it probably is," Empson says.

PROTECT YOUR COMPUTER

Download from trusted sites, including iTunes, Napster and Blockbuster. Pay for music, videos or software if you'd normally be expected to. Aside from putting your computer at risk, downloading items for free, when you should be paying, is a violation of copyright law. Assess a company offering online services. Look for agreements with movie studios and record companies and know what you're paying for. If a company offers unlimited downloads of the latest movies for \$11.95 a month, you're still not paying for the movies, just the bandwidth for a better download, Zabiuk says.

NETWORK SECURITY EXPERTS JOHN ZABIUK AND SCOTT EMPSON ON HOW TO PROTECT YOUR COMPUTER FROM THE MOST COMMON THREATS.

Are you a Mac user?
Think you're not at risk?
THINK AGAIN.

Sure, fewer attackers target Macs, but only because, as a percentage of market share, there are fewer Macs than PCs, Zabiuk says. "If the business world ran on Macs, you'd see a complete reversal of that."

THREAT: SPYWARE

"It's legal in Canada and the U.S.," says Zabiuk, and it allows companies to track what you're doing online, build up a profile and then sell that information to advertisers. The least invasive programs track your Internet searches, but others can collect your personal information, usernames and passwords. Symptoms of spyware include a barrage of pop-ups, a hijacked browser, random error messages and slow performance.

ACTIVITIES THAT PUT YOUR COMPUTER AT RISK

Like Trojans, spyware can sneak onto your computer when you download music, videos or software from untrustworthy sites.

PROTECT YOUR COMPUTER

Use anti-virus and anti-spyware software, as well as a firewall, and update them regularly. Update your operating system and web browser. Download software only from trusted sites – and don't install software without knowing exactly what you're getting.

Paramedic students take turns performing defibrillation and emergency airway procedures, and administering medication on a state-of-the-art pediatric mannequin during a training exercise at the NAIT pool.



POOLSIDE RESCUE

STORY BY
**ANN MACKAY-
DROBOT**

PHOTO BY
JASON NESS

The small figure lies motionless on the pool deck, swimming cap out of kilter, wet trunks sagging on a lifeless body. A frantic mother watches as a lifeguard performs CPR. Moments later, a group of NAIT Paramedic students arrive to perform an emergency pediatric resuscitation. The patient appears to be a boy of about six; he started drowning after choking on a candy and has gone into cardiac arrest.

He looks, feels and responds like a human boy – except he isn't one. He's a state-of-the-art pediatric mannequin – or patient simulator – used by NAIT's School of Health Sciences and he has the potential to save real lives. Paramedic students take turns performing defibrillation and emergency airway procedures, and administering medication. After 20 minutes of treatment on the pool deck, the 'patient' is transferred to hospital.

Simulation-based learning is a hallmark of NAIT training. Norbert Werner, associate chair of clinical simulation with the School of Health Sciences – and a veteran paramedic – says simulations are one of the safest, most effective ways to prepare students for the unpredictable world of emergency patient care. The training is also interdisciplinary, bringing together the team that would respond to a real-world emergency, from paramedics to the NAIT pool's actual lifeguard. "We're creating an immersive learning environment and following the lead of other high-risk, high-reliability occupations like aviation," Werner says. "Simulation-based education adds the crosswinds, turbulence and ice of the real world and that optimizes clinical performance and patient safety."

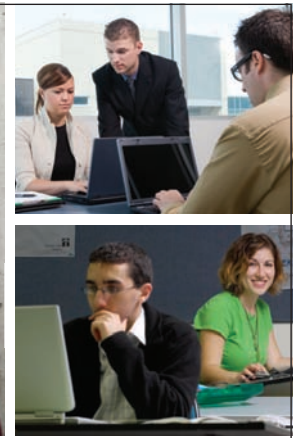
Second-year paramedic student Trevor Stephenson agrees. "It prepared us for the real thing. We could literally get vitals, do procedures . . . we intubated . . . did IV therapy. The mannequin does everything short of talk and walk."

FEATURES OF A MEDIUM-FIDELITY SIMULATION MANNEQUIN

- Pre-programmed or manually operated voice
- Anatomically correct
- Supports advanced airway management
- Supports electrocardiogram, medication and IV therapy
- Respiration
- Variable heart and lung sounds (wheezing, coughing)

ADDITIONAL FEATURES OF A HIGH-FIDELITY MODEL

- Eyes open and close
- Pupils respond to light
- Expires carbon dioxide



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CRIME FIGHTER



Two years after Edmonton Transit started using the crime-forecasting software developed by Stephane Contré (seen here on the Churchill Station LRT platform), reactive calls have dropped 52 per cent and proactive calls have risen 159 per cent.

STORY BY
MICHELLE MARK

PHOTO BY
JASON NESS

WEB EXTRA

Watch the announcement of the winner of *novaNAIT*'s inaugural technology and business ideas contest.

techlifemag.ca/novanaitchallenge.htm

After a group of oil company contractors narrowly escaped a hail of bullets on a quiet road in the heart of Africa, Stephane Contré knew he was on to something.

A security advisor with EnCana from 2003 to 2005 in the central African country of Chad, Contré had warned workers not to travel the over 200-kilometre route between their headquarters in the nation's capital, N'Djamena, and their drilling site at Bongor, on weekday evenings because of repeated encounters with highway robbers. But that night, delayed by mechanical problems, a convoy of workers opted to push ahead rather than wait until morning. It was a decision that could have cost them their lives. About an hour into the trip, they were ambushed by gun-wielding attackers who fired on the trucks; a bullet pierced the windshield of one truck, nearly hitting the driver.

Tasked with analyzing crime data from that region, Contré was already noticing a pattern unfold, so it was no surprise to him when he heard about the harrowing ordeal. "As it worked out, the robberies were highly correlated with the times when local army soldiers were off-duty," Contré recalls. "A distinctive pattern emerged and it related to the time of day and day of week."

Recognizing that pattern led Contré to develop an innovative crime-forecasting software program that's now being used to keep Edmonton Transit riders safer – and which recently won *novaNAIT*'s inaugural technology and business ideas contest.

Bringing his idea to fruition, however, posed many obstacles. He had no background in the programming language and software needed to develop a platform for his unprecedented analysis application. He encountered numerous data quality issues. He also lacked the skills necessary to commercialize the product. Contré had a lot to learn. But he persevered.

Today, the Daily Crime Forecast is being piloted by his current employer, Edmonton Transit System (ETS). The software analyzes crime data to identify patterns in criminal or suspicious activity and generates forecasts for when and where such activity is likely to happen. And the results are staggering.

Two years after the software was implemented, reactive calls dropped 52 per cent, while proactive calls rose 159 per cent.

As one ETS training officer says, the Daily Crime Forecast not only curbs crime within the transit system, it is also a morale booster for employees who are being deployed more effectively. "This allows us to focus our resources on where it's most likely that things will happen and prevent those things from happening again," Tana Veja says. "It's like fishing with a fish finder. It tells you where things will happen and because you're there, you see a positive outcome."

Contré says his idea for crime-forecasting software was born nearly a decade ago when he was working as a cop in Ottawa. Officers were periodically given crime hot spot maps that looked at where crime happened previously. "In a sense," Contré says, "we were always fighting yesterday's battle instead of anticipating what was going to occur today."

During his time in Africa, the pieces of the puzzle began to come together – and with most nights spent confined to a compound because of security concerns, Contré, who has a bachelor's degree in civil engineering and no formal training in computer programming, hunkered down and taught himself what he needed to know to develop the Daily Crime Forecast. "Every night I'd spend a couple of hours on my laptop reading and learning and programming. That's how I was able to learn most of my skills."

Then came the issue of data quality. "Figuring out how to work with imperfect data was quite a challenge, but I was able to work through that."

In fact, Contré developed 81 different algorithms, none of which worked, before going back to the drawing board. "Finally, I just had

to step back and totally change the way I was working at the problem," he says, adding that what he came up with took him in an entirely new direction.

Fast forward to 2008: with his software proven to work, and work well, Contré was ready to commercialize it. The opportunity to help him do just that landed in his mailbox last fall. A copy of *techlife* magazine, addressed to a previous resident, caught Contré's eye with its offer of a chance to win \$10,000 in services from novaNAIT, the institute's centre for applied research and technology transfer. Contré entered the inaugural novaNAIT Technology Commercialization Challenge and won.

Stuart Cullum, novaNAIT executive director, says picking Contré over the other 35 applicants, including seven other finalists who pitched their business and technology ideas to a panel of judges, was difficult. "What we liked about Stephane's software was that it had a very clear and practical application. It was already being used in a policing context and was piloted within that context and it had reaped significant results."

The centre is now helping Contré commercialize the Daily Crime Forecast, as well as providing him access to its business incubator, the Duncan McNeill Centre for Innovation.

Contré sees the potential for the Daily Crime Forecast as virtually limitless. For example, on a recent tour in Afghanistan, Contré (who is also a reservist with a local military intelligence company) effectively applied his model to roadside bombing situations. He envisions a day when, with the help of novaNAIT, his crime-forecasting software will be used around the world by police and security agencies – even oil companies operating in dangerous territories – to keep people safer. ■

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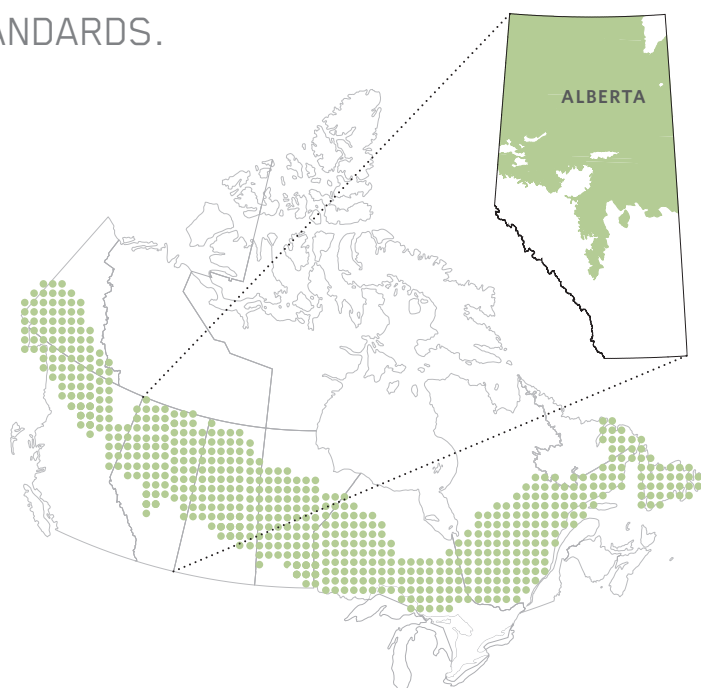
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OUR HOME AND NATIVE

HUGH SEATON TALKS ABOUT APPLIED RESEARCH BEING DONE TO HELP INDUSTRY MEET NEW LAND RECLAMATION STANDARDS.



The boreal forest covers 60 per cent of Alberta and is a vital habitat for wildlife, as well as a major carbon sink and a source of economic opportunity. It is also the location of thousands of oil and gas wells, service roads and pipelines – the construction of which has led to the removal of vegetation and topsoil from large areas within the forest.

The *novaNAIT* Boreal Research Institute, located in Peace River, recently received a \$1.47-million grant from the provincial government, through the national Community Development Trust, for research that will assist industry with reclamation. *Techlife* talked to Hugh Seaton, manager of the centre, about the forest and how the research, which will involve NAIT students and aboriginal communities, will help industry adjust to new Alberta standards for land reclamation.

The green band on the map denotes the boreal forest region in Canada. (Base data for the Alberta map provided by Spatial Data Warehouse. Copyright Alberta 2009.) Above, a view of the boreal forest just outside Edmonton.



PHOTO BY
JASON NESS

HIGH def

Land rec·la·ma·tion

| ˈlænd ˌre-klə-ˈmā-shən | noun

Land reclamation is the process of restoring a site that has been degraded by industrial activity to a state similar to its original condition. Alberta guidelines specify returning land to “a state of

equivalent capability,” with a mixture of shrubs and trees to avoid the dominance of a single species that could impede the diversity of plants needed to restore a functioning ecosystem.

TECHLIFE:

About one million hectares of Alberta land have been affected over the years by the energy sector. Can you give us an idea of the amount of ongoing oil and gas activity in Alberta’s boreal forest, and how great the need is for reclamation?

HS:

Currently in Alberta, about 20 per cent of the land that needs to be reclaimed is being reclaimed, so there’s a real need to accelerate the rate of reclamation. There are 176,053 wellsites in the boreal forest region, representing 35 per cent of the Alberta total. Of those, 79,991 or 45 per cent are abandoned. This is higher than the provincial rate, which is 35 per cent, indicating a high need for reclamation in the boreal region.

TECHLIFE:

How will the research you’re doing at the boreal centre help the oil and gas industry meet new government regulations?

HS:

Alberta’s new reclamation standard calls for two layers of boreal plant species to reclaim a site. That’s a greater challenge than the previous standard, which was a single grass cover. Our research team has a forestry background and can bring that knowledge to the oil and gas sector.

TECHLIFE:

Can you describe some of the research you plan to conduct with the \$1.47-million grant?

HS:

Our research is going to be very applied. We’ll be setting up operational trials in different ecosystems – in wetland, upland and mixed-wood sites. We’ll be looking at different planting regimes, different soil amendments and different silviculture practices. We’ll have demonstration sites, where we take a wellsite and break it up into different areas and give it different treatments. We’ll also be looking at a collection of boreal seeds and plants. We have a geneticist on contract scoping around for priority shrubs to make available to industry for reclamation. We want to develop manuals on best practices and make them available to industry.

TECHLIFE:

Will this research have implications for reclamation in the boreal forest outside the Peace district, including the oilsands, and even outside Alberta?

HS:

Our focus is on conventional wellsites and other industrial areas outside of the oilsands. Having said that, we see a potential connection to the oilsands in the area of re-vegetation. Once the soil is stabilized, then re-establishing the plant community is similar no matter where you are in the forested area. The other areas where we see crossover are in best practices and education.

– MIKE SADAVA



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→ [FROM IDEA TO MARKETPLACE]

STUART CULLUM, executive director of novaNAIT, the institute's centre for applied research and technology transfer, explains the three principles innovators need to consider when developing a product or service.

→ [PRINCIPLE 1: MARKET UNDERSTANDING]

Most entrepreneurs or inventors are creative. They have strong technical abilities and can build almost anything. What they often lack is an understanding of the marketplace. Even something completely novel won't necessarily sell.

"New Coke," introduced in 1985, is a famous example of a product innovation where the market was not well understood: Coke drinkers had an emotional attachment to the 99-year-old taste and panned the new soft drink. Two-and-a-half months later, the company brought back the much loved Coca-Cola Classic. Fortunately, Coca-Cola was large enough to withstand the cost of repositioning. Most start-ups wouldn't have the resources to recover.

Understanding whether a product or service will sell, to whom, in what form, for how much and what it will compete against will help determine whether an idea has sufficient commercial value.

→ [PRINCIPLE 2: PLANNING]

Too often entrepreneurs forge ahead on the technical development of their ideas without first considering what is required to develop viable business opportunities. Business planning is important; even more important is the process and strategic thinking involved in building the plan. Taking an idea to market requires a lot of money – likely more than most inventors have. Entrepreneurs who can demonstrate the market opportunity and the plan to succeed will find others willing to invest in their passion.

→ [PRINCIPLE 3: PEOPLE]

I have found the old adage to be true: investors will put their money in a B-grade idea with an A-grade team before an A-grade idea with a B-grade team. Innovators need to think about the skills that will complement theirs and when those skills will be required.

WHAT CAN novaNAIT DO FOR YOU?

EXECUTIVE DIRECTOR
STUART CULLUM EXPLAINS.

1. DO YOU HAVE A PRODUCT OR SERVICE YOU'D LIKE TO DEVELOP?

We can assess your idea and provide technical and business development expertise.

2. ARE YOU INTERESTED IN CONDUCTING APPLIED RESEARCH?

We can assess and develop your proposal and help find the resources – the people and the facilities – needed to conduct applied research.

3. ARE YOU AN EARLY-STAGE TECHNOLOGY BASED COMPANY?

Our Duncan McNeill Centre for Innovation offers incubation services that can help your business become a viable, sustainable venture.

4. WHAT OPPORTUNITIES EXIST TO PRESENT YOUR CONCEPT TO NOVANAIT?

We have an open-door policy for people pitching applied research and innovative ideas. In addition, the HATCH competition and the novaNAIT Technology Commercialization Challenge provide opportunities for support to NAIT students, staff, alumni and Edmonton-area innovators. Visit our website at novanait.ca for information about upcoming competitions.

5. WHAT FUNDING IS AVAILABLE TO HELP PAY FOR NOVANAIT SERVICES?

We can help determine which internal or external applied research and enterprise development funding programs are appropriate. For instance, programs such as the novaNAIT Prototype Development Program and the Government of Alberta's Innovation Voucher Pilot Program (novaNAIT is a service provider) allow entrepreneurs and companies to access government dollars to advance their product or service.



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Learn more at novanait.ca.

ZOOTOPIA

A TEAM OF STUDENTS IS HELPING THE EDMONTON ZOO REDUCE ITS ENVIRONMENTAL FOOTPRINT, STARTING WITH THE ENERGY-INEFFICIENT BUILDING THAT PROVIDES WINTER HOUSING TO SKUNKS AND OWLS, AMONG OTHER CREATURES.

STORY BY
KATHY FRAZER

PHOTOS BY
**JASON NESS AND
AMY BIZOVIE**

Surprising fact: Edmonton's Valley Zoo has a physical footprint almost as big as the famed San Diego Zoo. Although the Valley Zoo may not have the number of animals, traffic or global reputation of its California counterpart, it shares the concern of many zoos worldwide: making operations more sustainable.

Providing some help in that regard is a team of four students from NAIT's Bachelor of Technology in Technology Management (BTech) program: alums Brad Potts and Tyler Mercier, who hold Civil Engineering Technology and Chemical Engineering Technology diplomas, respectively; Atiqur Rehman, who has a mechanical technologies diploma from Pakistan; and Said Darras, who has an agriculture degree from Jordan. They are completing their capstone project, a two-semester course that addresses a specific real-world challenge faced by an industry partner.

With the goal of minimizing the zoo's environmental footprint, the team is exploring ways the zoo can reduce energy consumption and waste. In addition, they are developing a purchasing policy for greener alternatives in horticultural, cleaning and visitor-service products. The students will also be helping the zoo develop ideas for promoting environmental awareness among both visitors and staff. "The zoo wants to teach people, not just show them," says Potts.

"We're already working on a lot of environmental issues," says Dean Treichel, Valley Zoo operations

supervisor. "But having the student team here gives us an opportunity to zero in on one or two specific initiatives, and really push those forward."

To keep the scope of their project from becoming too ambitious, the team is focusing on a key building: the Old Winter Quarters. Built in the early 1960s with typical '60s technology, it provides housing for a variety of creatures whose usual zoo habitats are unsuitable for year-round use, as well as other animals used for educational purposes. Tropical birds, waterfowl, birds of prey and small mammals like skunks and meerkats all make a noisy home in this building, with its flat-roof design, low R-value insulation and energy-inefficient windows.

"We're definitely looking at practical solutions," says Darras, "and the nature of dealing with animals has to be factored in. A change you could make at home might not work in a zoo situation."

The Edmonton zoo's Old Winter Quarters (immediate right) provides seasonal housing for the skunk (above) and owl (centre right). It's also the subject of a BTech capstone project on reducing energy consumption and waste being undertaken by (far right, from left) Brad Potts, Atiq Rehman, Said Darras and Tyler Mercier, seen with zoo veterinarian Dr. Milton Ness (in the centre).





BTECH: THE DEGREE WITH A DIFFERENCE

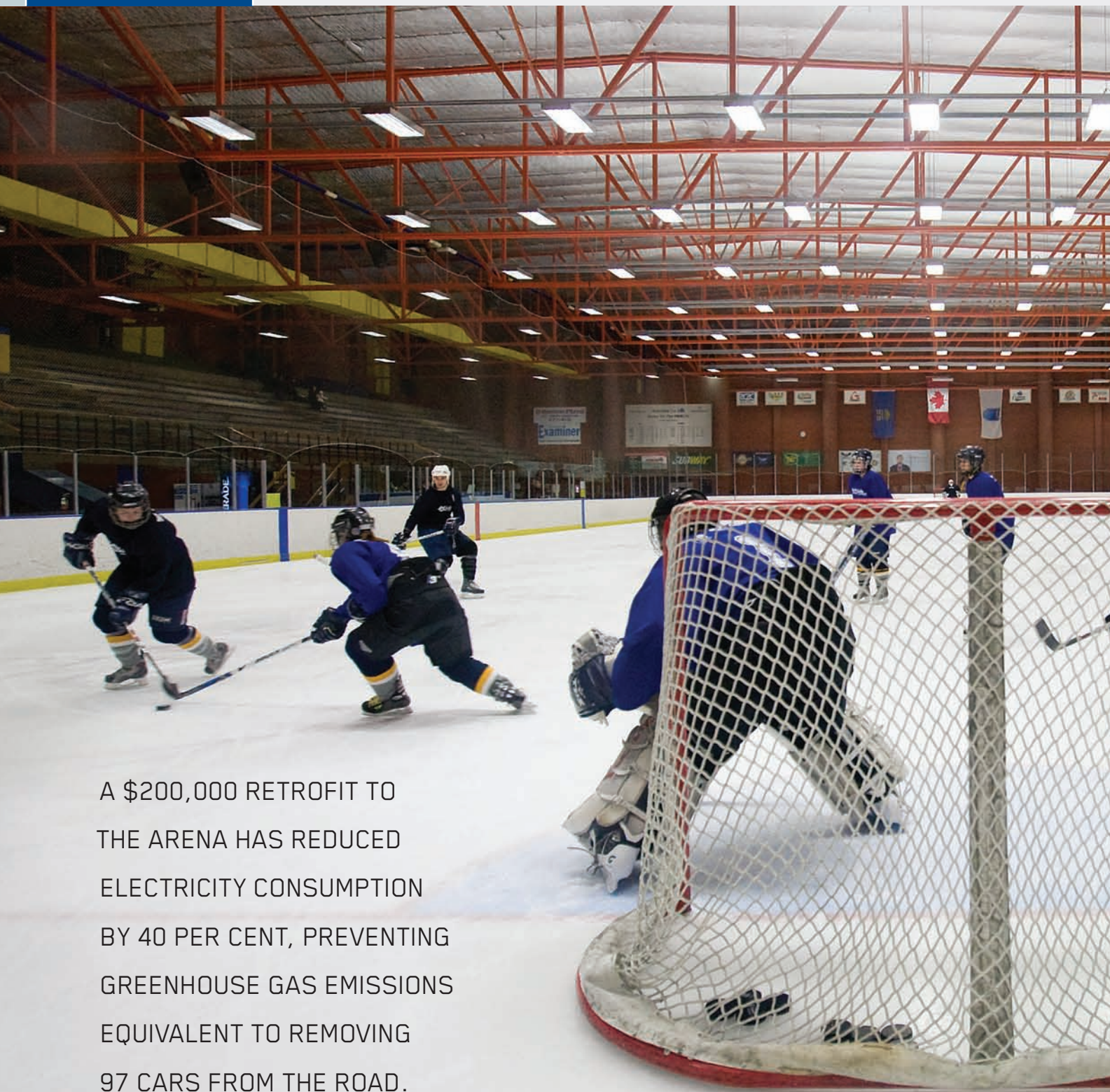
Spring 2009 will welcome the first-ever graduating class from NAIT's Bachelor of Technology in Technology Management (BTech) program. Launched in 2007, the BTech is unique in Alberta.

BTech students enter with a diploma in an applied science, health science or engineering technology field and study for two years, adding managerial skills, critical thinking abilities and research experience to their industry-focused technical knowledge.

The degree winds up with a capstone project, in which teams of students work with industry partners on an identified problem or opportunity.

The capstone teams are deliberately made up of students with diverse backgrounds. Not only does this reflect what they'll experience in the workforce, it provides differing perspectives on a problem, often leading to a better solution. Plus, says Joe Varughese, BTech program chair, "Students learn that others are depending on them to be subject experts. They find out fast that 'I don't know' isn't an acceptable response."

www.nait.ca/btech



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GREAT SAVE!



The Oaks women's, men's and alumni teams hit the ice in December to support the Kids with Cancer Society. The six teams, sponsored by members of the Edmonton business community, raised \$12,729 during the second annual NAIT Oaks Stick it to Cancer fundraiser.

PHOTO BY
JASON NESS

The NAIT arena has scored big energy savings and better ice conditions thanks to a recent retrofit.

The installation of high-efficiency T5HO fluorescent lamps and a low-emissivity ceiling have a net annual electricity savings of 40 per cent, while cutting annual carbon dioxide emissions by 530 tonnes – equivalent to removing 97 cars from the road for a year. Retrofits to the 35-year-old arena cost \$200,000, with an expected payback within less than four years.

Between 70 and 90 per cent of the energy input into the arena's old mercury vapour lights dissipated as heat, and between 92 and 95 per cent of the electricity used to power the old incandescent lamps was lost as heat, says Dennis Gibeau, NAIT's manager of energy management.

Not only are the new lights more efficient, but when combined with the reflective properties of the new ceiling, they also eliminate shadows on the ice. "I can see the puck quite a bit better," says defenceman Nick Stermer, a second-year Personal Fitness Trainer student. "It's helped me put the puck in the net," adds right-winger Chad Richmond, a third-year Finance student.

The low-emissivity ceiling, meanwhile, reduces heat transfer between the warmer ceiling and the colder ice surface – and that means the rink's refrigeration system doesn't have to work as hard. Before the ceiling was installed, both compressors often ran 24 hours a day; now, just one compressor can maintain the ice.

"I skate on it myself and I see a difference," says arena programmer Terry Baumgartner. "It's not as soft."

Though at times, he adds, the ice can be too cold. Gibeau, however, is stick-handling a fix for that – an infrared sensor that measures the temperature of the ice, rather than the brine, will provide more precise temperature control.

- KRISTEN VERNON

NO CAR NO FURNACE

NO PROBLEM

HOW ONE EDMONTON FAMILY'S COMMITMENT TO AN ENERGY-FRUGAL LIFE INSPIRED THEIR DREAM HOME.

"Open up! Open up!" Standing on the doorstep, I hear the pint-sized bundle of energy even before I see it, as five-year-old Luc struggles with a door stuck tight by a January thaw-freeze cycle.

Inside, the excitement continues. "We're going to watch a movie!" Luc exclaims, bouncing backward onto the couch in glee. He's clutching *Ice Age*, a title whose irony strikes only later as I reflect on the spectre propelling his parents' journey: global warming.

For Luc and his three-year-old brother Jacob, watching a movie is an event. So is riding in a car. And if the rack of half-dry clothes in the corner of the living room is any indication, the clothes dryer is as foreign to them as the army of dodos they're about to meet in the movie.

And that's not all. Before year end, the two boys and their parents, Conrad Nobert and Rechel Amores, will be living in what aims to be Alberta's first-ever LEED Platinum certified residential building – and Edmonton's second net zero energy house, a structure designed to produce at least as much energy as it consumes over the course of a year.

As the kids settle into their parents' bedroom with *Ice Age*, Nobert takes me for a tour of what's becoming known as the Mill Creek Net Zero Home. Just down the street from the family's current abode, it's framed and wired, but still a skeleton – albeit with a beautiful fir beam above the front porch, rescued from a liquor store.

"What about this house makes it net zero?" I ask, and Nobert is off and running. In two days he'll be describing how this house is put together at the Telus World of Science, so it's all fresh in his head. Sixteen inches of insulation. A seal so tight that all the cracks add up to no more than a dessert plate. Large south-facing windows. Cement flooring to augment thermal mass.

"Insulation is boring, right?" he says, wondering for a moment whether it makes for good reading. "People want to put solar panels up before they even seal their house." Yet the more complex parts of this house would make little sense without superior insulation and a painstaking seal.

STORY BY
CHERYL MAHAFFY

PHOTOS BY
**AMY BIZOVIE,
LEIGH FREY
AND JASON NESS**

Conrad Nobert and Rechel Amores with their sons, Jacob and Luc. The family will soon be living in a house that produces as much energy as it consumes over the course of a year.





Above, Luc plays on a wide window ledge made possible by 16-inch walls filled with cellulose fibre insulation, a design feature that cuts heat loss by more than one-third over conventional construction.

Right, the Nobert-Amores family relaxes in light flooding in through a large south-facing window; passive solar will provide 54 per cent of the net zero home's annual heating requirements.



That said, the design also demonstrates that a dash of complexity can amplify the impact of the mundane. Take window awnings. They're standard issue in energy-efficient houses, but because the sun's angle shifts from season to season, placement is always a compromise. The awnings envisioned for this house will not only incorporate photovoltaic cells, but flex to maximize the sun's rays. (Exactly how those awnings will move has yet to be designed, a fact that makes Amores nervous. Nobert, always the can-do, is optimistic about the homebuilder's proposal for accomplishing this.)

There's a premium to be paid for such innovations. About \$75,000 of the house's \$550,000 price tag can be attributed to the net zero design. "The first \$20,000 gave us 85 per cent of the benefit," Nobert says. "It's only because of our level of dedication that we spent the extra \$55,000. My point being, every new house should spend that first \$20,000."

A grey water system that will collect water from the home's three showers to flush toilets is adding \$3,500 while saving about \$60 a year. Solar panels will cost \$40,000 while returning about \$800 a year. Personal values rather than anticipated paybacks drive such decisions, Nobert readily admits. "But people don't question the \$40,000 they put down on a Sierra.

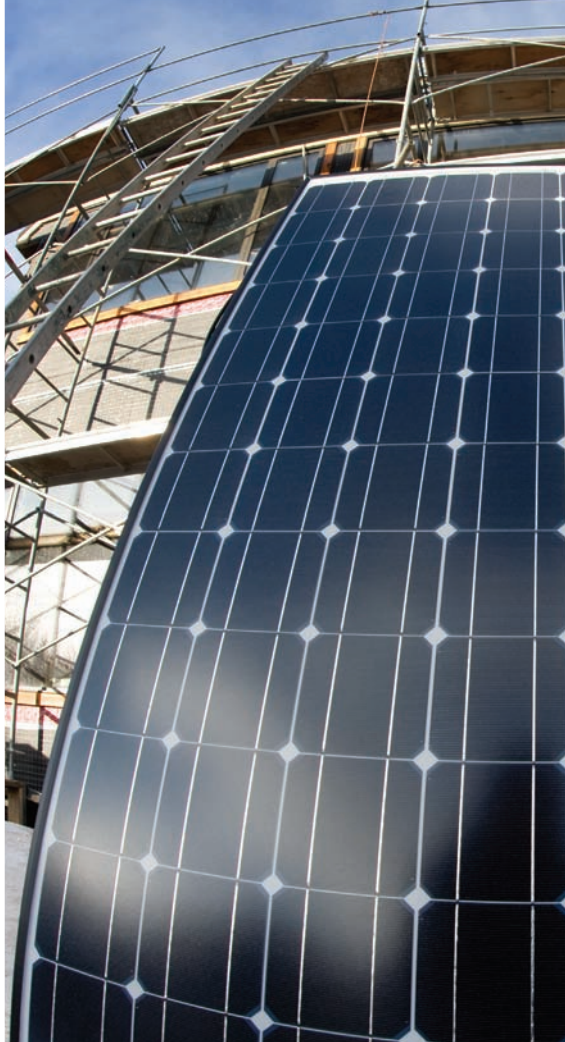
What's the payback on your car?"

On the flip side, being green will rack up savings. For starters, there's no furnace. None. Baseboard heaters will fill in any heating gaps. That alone will save more than \$9,000. The family will use so little natural gas that it makes no sense to connect to gas lines, saving more than \$350 a year while adding self-sufficiency. The house will be on the electrical grid, but is designed to feed more electricity back than it consumes. Thus: net zero. "Green can be more expensive, but sometimes it will save money if you do it right – if you push it far enough," Nobert says.

Theirs will also be a flex house, another concept that captures the imagination. Many families shift from house to condo as they age, Nobert notes. "But our plan is to create our condo right here. We're using a lot of energy to build this house in the first place. We want it to be able to work for us as long as possible."

Already, the home is plumbed and wired to allow a self-contained suite upstairs. The main floor will be barrier free, with a fully accessible bathroom.

The motley crew of *Ice Age* animals has experienced many adventures by the time we rejoin Amores and the boys in the family's current home. "It's boiling in here. You turned up the heat, didn't you?" Nobert observes



mildly, and there's reason to believe he's right.

Amores cradles a magic bag to warm her hands; originally from the Philippines, she's no fan of the cold. Hearing that, I'm all the more impressed by her ability to flex with what some partners might dismiss out of hand as an obsession with green.

Truth be told, Nobert's youth held signs of his path to come. Growing up near Spruce Grove, he was the sort who'd rally friends to pick up roadside garbage. "My parents were never big consumers," he says. "Both lived close to the land as kids, growing up on farms. I think I just picked up their values and ran with them."

Above left, the Mill Creek Net Zero Home will have 35 solar panels, making it one of Edmonton's largest residential systems. Above, the fir beam above the front porch was rescued from a liquor store.

"GREEN CAN BE MORE EXPENSIVE, BUT SOMETIMES IT WILL SAVE MONEY... IF YOU PUSH IT FAR ENOUGH."

— CONRAD NOBERT

The two met at the University of Alberta in the early '90s, where Nobert graduated from computer science (1999) and Amores earned a zoology degree (1993) and an environmental science degree (1995) before completing NAIT's Computer Systems Technology program in 1999. Married that same year, each began working for NAIT soon after: Nobert as a computer programming instructor, Amores as a systems analyst.

"We were different people back then," Amores recalls. "It's funny because I did study in the environmental science program, but we didn't talk about living a different way. We were young and foolish – and thought we were invincible."

Theirs has been a meandering journey with stops and starts, yet always trending toward green. They no longer eat meat (other than seafood), shop locally, compost, garden – and of course, hang dry.

For a while, Nobert ran a Volkswagen Jetta on biofuel concocted in his garage from waste restaurant oil. But that proved time-consuming. What's more, he knew that a widespread shift to biofuel would quickly outstrip the waste oil supply and require newly grown crops, in his mind "an expensive, topsoil-destroying boondoggle."

HOME TOUR

Tour the Mill Creek Net Zero Home on June 6, 2009 as part of the Eco Solar Home Tour (ecosolar.ca). Watch for other upcoming tours at greenedmonton.ca.



HIGH def

LEED | lēd | abbreviation - Leadership in Energy and Environmental Design is an internationally accepted building rating system that provides benchmarks, standards and certification for environmentally sustainable construction. In Canada, the rating system has been tailored for Canadian climates, construction practices and regulations.

Net zero | ³net l'zē-(,)rō | adjective - produces as much energy as it consumes on an annual basis. | noun - such a state.

Green-collar | 'grēn - 'kă-lər | adjective - Describes the type of job that, according to a United Nations Environment Programme report, not only contributes to preserving or restoring the environment, but has adequate wages, safe working conditions and worker rights. Green-collar jobs can be found in a variety of fields, from plumbing and electrical to engineering and architecture to administration, marketing and retail.

Above, seen from the rear, the more complex parts of this house, including solar panels, would make little sense without the superior insulation and seal.

Then, in July 2007, the family went car-free. "We debated it, believe me," Amores says. "But Conrad said, 'Let's just try it, and the second you want a car, we can buy one.' So I thought it's not forever."

Other than the occasional rental car, cycling fills in the transportation gaps, winter as well as summer. "I call it my zero-minute commute," Nobert says. "I could be putting in an hour in the gym; instead, I hop on my bike and appear at home with my workout done."

Being car free, coupled with the fact that both parents work three days a week, applies welcome counterbalance in a go-go-go culture, Amores says. "We've slowed down because we can't go fast."

What's more, they're saving \$25,000 by not building a garage behind their net zero home.

The journey to net zero had a detour of its own. Back in 2000, the couple hoped to live an energy-frugal life in the 1954 raised bungalow we're sitting in now. After \$25,000 in energy efficiency improvements, the home proved markedly snuggier but no more energy efficient than a standard new house. "And so we realized that, to get as far as we wanted to go, we would have to start from scratch," Nobert says.

In 2005, they bought a 100-year-old house two doors away, thinking they'd rent it out for a decade, then tear it down and build an energy miser. Escalating real estate prices prompted Nobert to dream of speeding up the timeline, and the dream grew legs when he caught wind of plans to build a net zero home in Edmonton with a team involving designer and homebuilder Peter Amerongen of Habitat Studio & Workshop. When Amerongen said they already had a lot in Riverdale for the net zero house, Nobert had a comeback: "Then we want to be next."

It meant a wait, but that gave Nobert time to deconstruct the old house. He saved Douglas fir and maple flooring for the new home. He saved windows for use as cold frames. He knocked out dozens of 2x4s with a sledge hammer, until tendonitis forced him to call a halt. By July 30, 2008, when the bulldozer came in, the house was little more than wood and plaster.

Now Net Zero Two is taking shape under Amerongen's watchful eye. "We're very much on the same page," the homebuilder says. "In fact, if anything, they're pushing me to go further, probably more than anyone else has ever done. I didn't think it was possible to get to net zero on that site without being impractical, but Conrad wouldn't let go."

Not that there weren't compromises. Nobert's desire to use a composting toilet, for example, fell prey to cost, round-the-clock venting needs and predictions of an occasional invasion of flies. "We're pretty dedicated," Amores says. "But flies in the bathroom?"

There's no doubt Nobert and Amores hope their net zero home will help spur a massive migration to green. Nobert has become somewhat of an evangelist for the cause, giving speeches, submitting to interviews and tracking the home's construction on his website, greenedmonton.ca. Beyond building with care, the couple is determined to use this home in a way that proves we can reduce our dependency on fossil fuels. That's what it will take, they believe, to leave Luc and Jacob a world in which life can survive.

"Conventional thinking was that natural gas is pretty cheap, so it doesn't make sense to do what we're doing," Nobert says. "That thinking is what we're trying to turn on its head."

Not to outrun an ice age, but to stop global warming in its tracks. ■

ZERO IN

GET INSIDE THE HOUSE THAT WILL PRODUCE AS MUCH ENERGY AS IT CONSUMES OVER THE COURSE OF A YEAR.



10,591 kWh Estimated total amount of energy needed annually for heating, hot water and appliances

BETWEEN 8,000 AND 8,500 kWh Amount of energy the solar electric system will generate annually

2,500 kWh Amount of energy the solar hot water collectors will produce annually

Rear view of the Mill Creek Net Zero Home.

DESIGN BY
HABITAT STUDIO & WORKSHOP LTD.

ILLUSTRATION BY
DEREK LUE

1 16-inch walls are filled with cellulose fibre insulation made from recycled newspaper, cutting total heat loss by more than one-third over conventional construction; six-inch walls are fitted with batts of insulation in traditional construction.

2 Large south-facing windows, coupled

with interior concrete floors that absorb heat during the day and then release it during the evening, provide 54 per cent of the home's annual heating requirements.

3 The 6-kW solar electric system, with 12 photovoltaic modules on the roof and 10 on each solar awning, will be one of Edmonton's

largest residential systems when fully installed.

4 Solar awnings will be moved seasonally to orient the solar modules towards the sun for maximum electricity production and to shade the windows in the summer.

5 Solar hot water collectors provide

90 per cent of the home's annual hot water consumption. The remainder is produced by electricity.

6 Interior wood trim and exposed beams were recycled from local sources, including the house that once stood where this one is being built.

7 A grey water collection system flushes toilets

with shower water. Water-efficient plumbing fixtures and toilets will save the equivalent of 734 bathtubs a year of water compared to a new home with fixtures that meet Edmonton's new water-efficient fixtures bylaw.

8 A locally manufactured light pipe – a tube that pipes sunlight into

the room – provides daylight to the windowless second-floor bathroom.

9 A selection of the most efficient appliances, plus the decision to hang-dry clothes instead of using a dryer, will reduce electricity use by 50 per cent over that of a typical new home.

MEET the BUILDERS



Above, the push to net zero has provided a welcome challenge for (from left) Mike Paul, journeyman plumber and gasfitter-first class; Paul Whincup, architectural technologist; and Bernie Schaloske, journeyman carpenter.

STORY BY
CHERYL MAHAFFY

PHOTO BY
JASON NESS



MIKE PAUL

Plumbing isn't the first place you'd expect to find beauty or forward thinking in a home. But contractors working with Mike Paul of Up-To-Code Mechanical expect the unexpected.

Take the solar thermal system Paul installed in Edmonton's first net zero house. "It's not only functional, but it looks wonderful," homebuilder Peter Amerongen says. "We had mechanical, chemical, electrical and structural engineers working this out, and he was sitting at the table with these guys, very familiar not only with plumbing concepts and flows, but with the physics necessary to make this work."

Paul began a plumbing apprenticeship on the rebound after partying through two years at the University of Alberta and losing his spot in forestry. "At first I wasn't totally set on plumbing as a career," he recalls. "But as soon as I entered NAIT and started to learn more about the codes and the trade, I was hooked."

Launching Up-To-Code Mechanical in boom time 2003, Paul now employs 11 and is still running to keep up, despite global shifts in fortunes.

It's a tribute to his curiosity about what's coming next, says Bernie Schaloske. "Demand hot water heaters, solar hot water collectors – those are challenges that float his boat."

PAUL WHINCUP

It's not every high school student who studies home lottery flyers for fun. Paul Whincup did, mentally manipulating the blueprints behind those dream homes.

Immediately after high school, Whincup joined Habitat Studio & Workshop as a jobsite labourer. Still intrigued by the bones of a place, he enrolled in Architectural Technology at NAIT while continuing to work part time.

Graduating in 2007, he traded the hammer for such electronic design tools as AutoCAD and SketchUp. Study any plans for a house designed by Peter Amerongen, and chances are you're seeing Whincup's draftsmanship.

Like most Amerongen homes, Net Zero Two took shape in SketchUp, a 3-D Google application that enables clients to envision and even adjust the design. Whincup then transferred the design to AutoCAD for a 2-D perspective that details the building's skeleton and circulatory systems. The push to net zero added a welcome challenge as he plotted out grey water systems, moveable awnings and more.

A 3-D vision of Whincup's own future includes a possible degree in architecture, although he's loath to leave a job that offers daily education. What's certain is that the place he'll someday design for himself will be kilojoules more efficient than the dream homes of his youth.

BERNIE SCHALOSKE

While others in carpentry class were building stairs, Bernie Schaloske and a classmate built two half-scale models of the wall system that makes the Riverdale and Mill Creek net zero homes warm and airtight. One model serves as a teaching tool at NAIT; the other is on display at the Riverdale Net Zero Duplex, where Schaloske discovered his calling after decades of occupational meandering.

Born into a broiler-raising brood in B.C., Schaloske traded sunny Shuswap for Edmonton in 1995 after his family sold the farm. Stints in market gardening and pharmaceutical inventory were followed by symphony marketing, which connected him with the city's musical community and with his life mate, but not with a career.

He got closer after adding landscaping and masonry to his resumé. But it wasn't until the father-to-be, who enjoyed renovating his first home, decided he needed year-round work that he signed on as a finishing carpenter and entered NAIT's Millwork and Carpentry program.

"I learned very, very quickly that there's a lot more to a carpentry ticket than I was ever going to learn by doing a ton of baseboards and window casings," Schaloske recalls. So when a classmate raved about the diversity at Habitat Studio & Workshop, he knocked on the custom builder's door.

A journeyman since February 2008, Schaloske is among the dozen or so NAIT graduates and apprentices building the Mill Creek Net Zero Home. "If there's one disappointment, it is that I could have figured this out a lot sooner," he says. "The consolation is that it's been a very, very interesting ride."

THE PLUMBER, THE DRAFTSMAN, THE CARPENTER –
THESE THREE ARE AMONG THE DOZEN OR SO NAIT ALUMNI
AND APPRENTICES CONSTRUCTING THE MILL CREEK NET
ZERO ENERGY HOUSE.

ILLUSTRATION BY
ANDREA YURY

8 ways YOU CAN SAVE at home

HERE ARE SOME QUICK FIXES YOU CAN MAKE TO REDUCE ENERGY AND WATER CONSUMPTION.



[1]

TOILETS: Older toilets can use as much as 20 litres of water compared to the six litres or less for a \$100-\$250 low-flush toilet.



[2]

SHOWER HEADS: Showers account for 66 per cent of hot water consumption and 22 per cent of total water use in a typical home. Ranging from \$8-\$90, an energy-efficient shower head uses up to 35 per cent less hot water, saving about \$65 on your natural gas bill.



[3]

PROGRAMMABLE THERMOSTATS: Premium-efficiency models cost about \$100. For every one degree Celsius you lower the house temperature for a minimum of eight hours, you can expect to save two per cent on your heating bill.



[4]

HEATING: A furnace accounts for 60 per cent of the total energy used in a home. A high-efficiency furnace costs about \$5,000 and can save 35 per cent on heating bills.



[5]

AIR LEAKS: Air leaking from gaps under doors and around windows and through foundation cracks and unsealed fixtures accounts for 25 to 40 per cent of the heat lost in older homes. An investment in weatherstripping and caulking, which can cost \$100 to more than \$1,000, can save hundreds of dollars in yearly heating costs.



[6]

VENTILATING FANS: Energy-efficient range hood and bathroom fans can use up to 65 per cent less energy than standard models.



[7]

CEILING FANS: Energy-efficient fans can move air up to 20 per cent more efficiently than standard fans. Save even more with an energy-efficient lighting kit.



[8]

LIGHTING: Compact fluorescent light bulbs cost about \$3 each and use up to 75 per cent less electricity than incandescent bulbs, paying for themselves in about five months.

Plus

THE FEDERAL AND PROVINCIAL GOVERNMENTS HAVE SOME PROGRAMS TO HELP YOU SAVE MORE MONEY

Home Renovation Tax Credit: Up to \$1,350 is available on expenditures related to products or work performed between Jan. 27, 2009 and Feb. 1, 2010. cra-arc.gc.ca/hrtc

ecoENERGY Retrofit – Homes grants: Up to \$5,000 is available for certain renovations that improve energy efficiency. ecoaction.gc.ca

Energy Efficiency Rebates: Various rebates are available for making energy efficiency improvements. Eligible purchases are retroactive to Jan. 1, 2009. climatechangecentral.com

GET MORE INFORMATION
ON ENERGY EFFICIENCY
IMPROVEMENTS
FOR YOUR HOME

- greenalberta.ca
- green.cbc.ca
- co2re.ca
- edmonton.ca/ecovision
- powerwise.ca

- DIANE BÉGIN-CROFT

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Four parts
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Water is essential to the production of our high quality product *Syncrude Sweet Blend*. Since our operation began we've found ways to use and reuse water so that our dependence on fresh water is minimized. Through technology we've developed, about 80 percent of the water we use is recycled and our overall water usage is less than half the oil sands industry average. And we continue to search for even more efficient ways. That's why we've been industry leaders from the beginning—innovating in water conservation and all areas of oil sands development. Go to **syncrude.com** to find out how.



A woman with short dark hair, wearing a black t-shirt with a red tree graphic and blue jeans, stands next to a large, textured tree trunk. She is looking upwards and to the right. The background shows a clear blue sky and a city skyline in the distance. The text 'N 53° 32.223' and 'W 113° 31.046' is overlaid on the image.

N 53° 32.223
W 113° 31.046

Kate Zmurchyk models the Beautiful Lady Tree T-shirt (graphic on opposite page). Located at 114 Street and 99 Avenue along the top of the river valley bank in Edmonton, this is the tree that started Earth's Revolution clothing company.

A PROMISE TO A TREE

ENTREPRENEUR KATE ZMURCHYK'S CONVERSATION WITH A STATELY POPLAR PLANTED THE SEED FOR A CLOTHING COMPANY THAT CO-ORDINATES A PRESERVATION MESSAGE WITH SUSTAINABLE BUSINESS PRACTICES.

Why start a green business? For Kate Zmurchyk, an entrepreneur who launched an eco-friendly clothing company called Earth's Revolution in early 2008, it began with a conversation with a tree. Zmurchyk loves trees, especially a stately poplar whose beauty often energized her walks through Edmonton's river valley. Unfortunately, her special tree flourishes on prime real estate. As Zmurchyk pondered its uncertain future, she made it a promise: she'd try to save what it symbolized to her.

The idea took root: she would put the tree's image on T-shirts to spread a preservation message. Branching out further, she'd run her business on sustainable principles, showing that economic success is possible without sacrificing environmental principles. Then she backed up her commitment in ink. While developing her business plan, she began the painful process of having a tree tattooed over half her body. Fifteen months later, the tattoo had grown from mid-thigh roots to leaves over her shoulder, and Earth's Revolution was born.

Looking back, the tattoo was the easy part. The 30-year-old part-time anatomy instructor at NAIT had no design training, so she learned website construction and signed up for Adobe Illustrator courses to learn to manipulate her photographs into digital graphics. Then she hit the challenges of green procurement. She wanted organic material from companies committed to fair trade and labour practices, but a four-month search revealed that no North American suppliers met her criteria. Her final choice was more far-flung – a U.K. company that sources its material from Turkey as well as from a solar and wind powered company in India. After several false starts, she succeeded in her quest for a local, environmentally conscious silk-screening company capable of responsibly transferring her designs onto T-shirts and hoodies made from 70 per cent bamboo and 30 per cent organic cotton.

"I almost dropped the project many times," Zmurchyk says. "I could write a book called It's Not Easy Being a Green Business. You have to consider every aspect of production."

Zmurchyk deliberately started small, but she's dreaming big. She wants her business to prosper, not for personal wealth, but so she can invest profits in other green ventures. This year, Earth's Revolution is supporting Edmonton Guerilla Gardening, a grassroots group dedicated to returning native plants to urban

landscapes. In the future she hopes to finance the start-up of other small green businesses. Above all, she aims to show that not only can individuals change their habits, businesses can too. "Most young people want to live responsibly, but society doesn't make that easy. For big change, industry has to change too."

Inspired by a tree, Zmurchyk's final product moves well beyond tree hugger clichés. The fabric is soft, the designs unique, and the style so – well – sexy, that the appeal extends beyond the save-the-whales crowd. According to Zeina Haddad, owner of Zatoon boutique in Millet, "Customers love Kate's clothing. They feel good wearing the thought-provoking messages – and they look great too."

As the market continues to surge for green products, so too has a less desirable trend – greenwashing, or attempts to boost sales to the ethical consumer through misleading claims. Where does Zmurchyk fall on the green spectrum – real deal or wannabe? Dr. Klay Dyer, who teaches courses on greenwashing and business ethics in NAIT's Bachelor of Technology in Technology Management program, gives Earth's Revolution a passing grade.

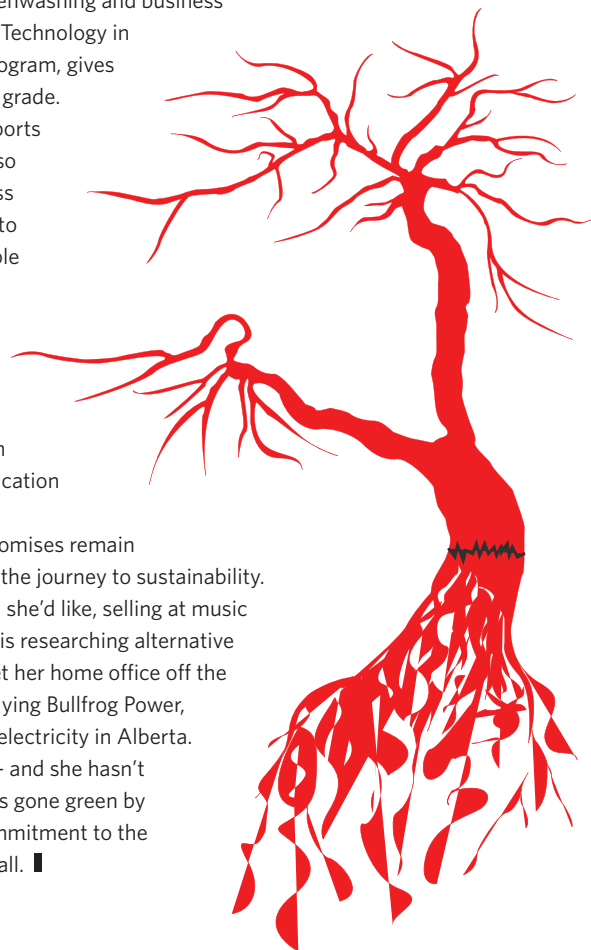
"Ms. Zmurchyk not only supports fair trade in principle, she also 'walks the talk' in her business practices. Her commitment to deal locally whenever possible is commendable, as is her multi-attribute approach, considering not only the environmental impact of her business, but also its impact in terms of human rights and the financial implication of each business decision."

Zmurchyk knows compromises remain part of everyone's reality on the journey to sustainability. She travels by car more than she'd like, selling at music festivals and trade fairs, but is researching alternative fuel vehicles. She'd like to get her home office off the grid, but does her best by buying Bullfrog Power, which provides wind power electricity in Alberta. Still, her T-shirts are selling – and she hasn't sold-out in the process. She's gone green by design, and has kept her commitment to the tree whose image started it all. ■

STORY BY
LISA RICCIOTTI

PHOTOS BY
AMY BIZOVIE AND
JASON NESS

ILLUSTRATIONS BY
KATE ZMURCHYK



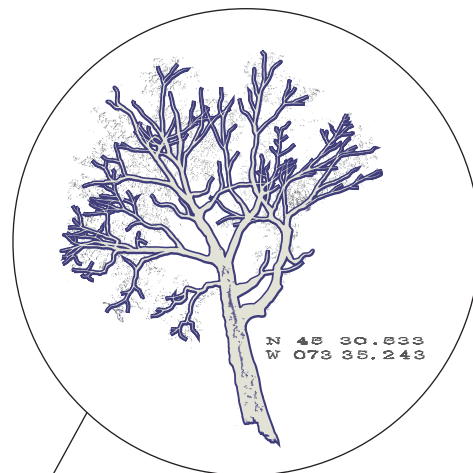
KATE'S FAVOURITE TREES

WEB EXTRA

Be the first to find one of two Earth's Revolution geocaches and you'll receive one of Kate Zmurchyk's unique T-shirts.

techlifemag.ca/earthrevolution.htm

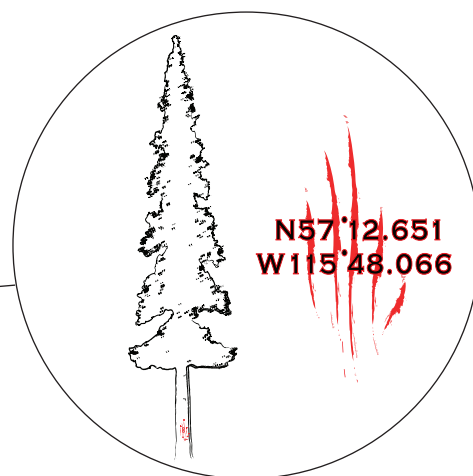
Kate Zmurchyk's tree graphics set Earth's Revolution apart in a growing field of fashion that targets the socially and environmentally conscious consumer. No green-washed imagery for Zmurchyk – her trees really exist. It's a unique concept: all clothing shows the trees' GPS co-ordinates, since Zmurchyk has personally visited them and hopes others will too. Her website, earthrevolution.com, relates the behind-the-shirt stories, explaining why each tree needs protection. Zmurchyk has expanded her message with images from such endangered Canadian species as the burrowing owl, peregrine falcon and right whale. A cheeky new baby onesie featuring a frog urges parents to "Change me, not the world."



A deciduous sentinel overlooks Montreal as the city's parkland diminishes.



This 800-year-old cedar in Tofino, B.C. was slated for the chopping block, then saved by local protesters.



An Alberta Rocky Mountain conifer, in grizzly bear habitat, proudly emblazoned with scars from their scratches.

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The view from the ridge is worth the climb; it's like standing at the lip of a volcano....Smoke boils up in a dense grey column. Flames glow orange, like glimpses of flowing lava. The canyon is a perfect chimney up the side of the mountain. There's no way we're getting in front of that.

You can almost feel the heat and smell the acrid smoke of a raging forest fire when you read *One Careless Moment*, Dave Hugelschaffer's latest novel.

Hugelschaffer's protagonist, Porter Cassel, is a wildfire investigator who tends to skirt the lines of authority but always solves the mystery and gets his arsonist. While the novels have been compared to the popular *CSI* television series, Cassel has been called the "Dirty Harry" Callahan of forest fire investigators.

It's no accident that Hugelschaffer's literary work, which is unique in its subject matter, accurately depicts the work of a fire sleuth and the makings of a forest fire. Forestry has been his career for 20 years, both in the private sector and the provincial forest service – including many summers fighting fires, starting when he was a NAIT student (Forest Technology '89) – although he hasn't fought a fire for five years.

Bear Lake, in a home he shares with his wife Cindy, four children, a guinea pig, rabbit, chameleon, fish and a small mop of a dog, Hugelschaffer says firefighting is a dangerous business, but one he misses and hopes to return to.

"There's a certain amount of excitement – you never know what you're going to find. You're going to an unpredictable event, but you're also well-trained. It's excitement mixed with dread and anticipation."

He's had his share of close calls.

He was in a helicopter when the pilot brought the chopper so close to a power pole that the rotors clipped off transformers. He was forced to jump into a slough to escape flames after the wind unexpectedly picked up and drove a fire towards him before the water pumps could be set up. And, sadly, he has lost friends, forest rangers who died in helicopter and plane crashes in the line of duty.

But his novels are not just based on personal experience. He has done extensive research, interviewing coroners, arson and explosives experts from the RCMP, and top American fire investigators. His books are so exact in outlining procedure that they

STORY BY
MIKE SADAVA

PHOTOS BY
JASON NESS

Right, Hugelschaffer's love of outdoor adventures provides him with authentic content for his burgeoning career as a crime writer. The relationship between forest fires and crimes such as murder is central to the plot lines of his novels.

"LITTLE KIDS SAY THEY WANT TO GROW UP TO BE A FOREST RANGER OR A FIREFIGHTER, AND I DID BOTH."

– DAVE HUGELSCHAFER

Hugelschaffer has been in the thick of fires that covered an area roughly twice the size of Prince Edward Island. He has been on initial attack crews, heading out in a helicopter minutes after the fire is reported, to be the eyes and ears of the dispatchers who send out equipment and firefighters. He has been with the first people on the ground to start setting up the battle lines. He has also investigated several fires.

In *Careless*, Hugelschaffer describes what it's like to approach a fire.

Up ahead the road forks, and a small brown sign points the way to Blood Creek. We rattle over more washboard, then start uphill on a steep, winding grade. The trees – big ponderosa thick with fir understory – are so close to the edge of the road it seems the forest might slap together like a giant vise, trapping us.

I hope the fire isn't burning in the same type of fuel.

Relaxing in the rolling Alberta countryside near

have been handed out to students by a trainer of fire investigators.

From his work and his research, Hugelschaffer has discovered that fires are often used to mask other crimes such as murder. This relationship, and solving those mysteries, is central to his plot lines.

It may seem unlikely that an Alberta forester manages to get his books printed by a Toronto publishing company that includes the likes of Nino Ricci and Marie-Claire Blais in its stable of writers. Marc Côté, publisher of Cormorant Books, says the company receives up to a thousand submissions a year, but it's no mystery why Hugelschaffer's unsolicited work bucked the odds: "They're just really good stories. You have an interesting character; you're inside his head; you hear his voice and you want to spend time with him."

Côté won't say how many Hugelschaffer novels have been sold, but they're successful enough that Cormorant will continue the series.

A man with light brown hair and a goatee is looking off to the side. He is wearing a tan leather jacket with fringe on the shoulders and chest, over a plaid shirt. The background is a wooden building with a gabled roof.

A NOVEL CAREER

AUTHOR DAVE HUGELSCHAFER DRAWS FROM HIS EXPERIENCE AS A FIREFIGHTER AND FORESTER TO WRITE A COMPELLING CSI-STYLE FICTION SERIES.



WIN AUTOGRAPHED COPIES OF DAY INTO NIGHT AND ONE CARELESS MOMENT

Author Dave Hugelschaffer says little kids want to grow up to be a forest ranger or a firefighter – and he did both. When you were a child, what did you want to grow up to be? Tell us and we'll enter your name into a draw for one of three sets of Hugelschaffer's novels – *Day into Night* and *One Careless Moment*. Send 200 words or less to editor@techlifemag.ca by July 15, 2009.

"THEY'RE JUST REALLY GOOD STORIES. YOU HAVE AN INTERESTING CHARACTER; YOU'RE INSIDE HIS HEAD; YOU HEAR HIS VOICE AND YOU WANT TO SPEND TIME WITH HIM."

– MARC CÔTÉ, PUBLISHER, CORMORANT BOOKS

Above, novelist Dave Hugelschaffer in the cabin he built on his parent's property in rural Alberta. His protagonist, Porter Cassel, is a wildfire investigator who skirts the lines of authority, but always solves the mystery and gets his arsonist.

WEB EXTRA

Read the first chapter of *One Careless Moment* and watch the video trailer for the book.

davehugelschaffer.com

Hugelschaffer started writing when he was about 16, mainly because he was a voracious reader. A farm boy from near Bon Accord, his interest in outdoor activities took up his time and he didn't get serious about writing until five years later, with his first forest service posting in Fort Chipewyan. He had no takers for his first three novels – one a science fiction novel, the other two he describes as serious works with ecological themes. Success in getting his work published didn't come until he started the Porter Cassel series.

"There wasn't a moment, but a gradual realization that no matter how much you like to write for various reasons, if you're going to have success you have to write something that people want to read. You have to convince (a publisher) to invest money in you, that you have a product they can sell."

Despite his growing literary success, Hugelschaffer has no plans to quit his day job at the Sustainable Resource Department office in Edson, where he counts among his successes a Premier's Award of Excellence for his innovative work with the Integrated Land

Management team, which co-ordinates activities of the forestry and energy sectors to reduce their total environmental impact.

He has always loved outdoor pursuits, such as canoeing and running sled dogs – even spending time in the bush as a trapper – and says forestry is the perfect career for him.

"I was looking for something related to my desire to be outside with some adventure and excitement rather than in a lab or an office. It's one of those jobs where you can do that. Little kids say they want to grow up to be a forest ranger or a firefighter, and I did both."

Not to mention turning that experience into a burgeoning career as a crime writer who can describe so well the mixture of terror and awe evoked by a forest fire.

Fires appear different when seen from the air. They're silent and look smaller against the surrounding forest. They can appear deceptively benign, almost beautiful in their own way. But there's nothing beautiful about this one. It's a killer, belching flames and poisonous fumes. A real dragon. ■

GREENING THE READ

4 MUST-READ BOOKS TACKLE SUSTAINABLE TOPICS

A SHORT HISTORY OF PROGRESS

by Ronald Wright

This is the book for anyone wondering if we intelligent, resourceful, technology-rich humans could allow ourselves to fundamentally alter the environment we depend on for our survival. It is a concise and highly readable account of how our ancestors adapted so well to their surroundings that they destroyed the environment that sustained them. Hindsight this clear gives us the foresight we'll need if we wish to avoid their fate.

Peter Amerongen (PAGE → 28)
Habitat Studio & Workshop Ltd.

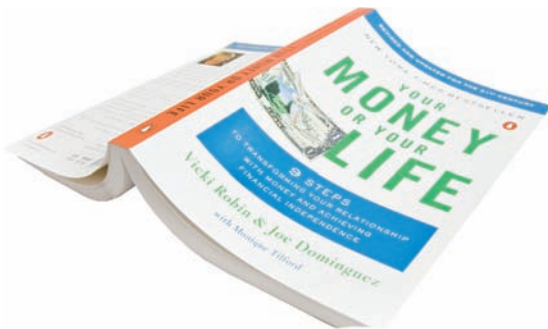


◀ YOUR MONEY OR YOUR LIFE: 9 STEPS TO TRANSFORMING YOUR RELATIONSHIP WITH MONEY AND ACHIEVING FINANCIAL INDEPENDENCE

by Vicki Robin and Joe Dominguez

This book helped me see the value of a simpler (greener) lifestyle that allows more time for family and friends. Following the book's advice, we have gained a lot of financial freedom while working less and living more.

Rechel Amores (PAGE → 28)
NAIT systems analyst and co-owner of Edmonton's second net zero house



THE GOLDEN SPRUCE: A TRUE STORY OF MYTH, MADNESS AND GREED

by John Vaillant

This must-read book will alter your understanding of the environment, Canadian history and miracles. The story of a violent act against a golden spruce on British Columbia's Queen Charlotte Islands is so steeped in Canadian history and politics that you will wonder how this is not a mandatory read for post-secondary students.

Leslie Chivers (PAGE → 56)
Student, NAIT Forest Technology

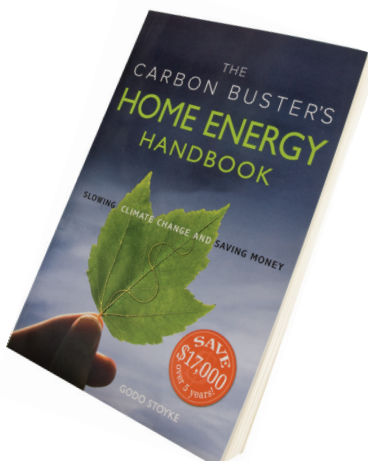


◀ THE CARBON BUSTER'S HOME ENERGY HANDBOOK

by Godo Stoyke








I like this book because it makes the link between saving money and saving the environment. Most of the personal energy efficiency investments described in the book offer better returns than government savings bonds and pension funds.

Conrad Nobert (PAGE → 28)
NAIT Computer Systems Technology instructor and co-owner of Edmonton's second net zero house



3 QUESTIONS

6 people weighed in, here's what they had to say.

 <p>DEBRA COUWENBERG NAIT Tech Store retail supervisor</p>	<p>Q1: WHAT'S YOUR FAVOURITE GREEN PRODUCT AND WHAT MAKES IT GREEN?</p> <p>Plastic folding crates and the Lug Eco Shopper reusable bag, which folds up like a wallet, in place of boxes and plastic bags.</p> <p>The Lug Eco Shopper is available at the NAIT Tech Store or online at www.nait.ca/onlinestore.</p>	<p>Q2: HOW MANY CELLPHONES HAVE YOU OWNED?</p> <p>Four. My first, 14 years ago, was a Motorola.</p> <p>Where to recycle old cellphones PAGE → 11</p> <p>The genesis of the cellphone, Mobile Evolution PAGE → 58</p>	<p>Q3: WHAT ARE YOU DOING TO SAVE MONEY?</p> <p>In our house we ask, "Is this a want or a need?" Only needs are accommodated at the moment because we are saving for holidays.</p> 
<p>SAID DARRAS Student, NAIT Bachelor of Technology in Technology Management PAGE → 24</p>	 <p>Stainless steel water bottle. Disposable plastic water bottles can leach toxic chemicals when they are reused and stay in the environment for hundreds of years.</p>	<p>Thirteen. The first cellphone I bought was a Motorola in 1995.</p> 	<p>I buy only what I need and in proper quantities. I plan my purchases, set a budget and stay within it.</p> <p>WEB EXTRA Get budget tips from JR Shaw School of Business Finance instructor Christine Tarbox. techlifemag.ca/budget.htm</p>
<p>DAVE HUGELSCHAFFER Alum; Author of Porter Cassel mystery series PAGE → 42</p>	<p>Household cleaner TKO. Made from orange peel, it works better than most chemical cleaners, but without the harmful environmental effects.</p> 	<p>Never had a cellphone until I moved into the country. Now I have several as I have been waiting two years to get a land line installed.</p>	<p>Installed a high-efficiency wood stove to heat my house and reduce energy costs.</p>
<p>MIKE PAUL Alum; Founder of Up-to-Code Mechanical Ltd. PAGE → 34</p>	<p>Solar flat plate hot water collectors because they make hot water out of thin air.</p>	<p>Twelve phones? Water and 10-foot ladders are my No. 1 enemy.</p>	<p>I take my foot off the gas when the light turns from green, spend time in the dark and turn the burner/oven off when the meal is almost ready.</p>
<p>BERNIE SCHALOSKE Alum; Journeyman carpenter with Habitat Studio & Workshop Ltd. PAGE → 34</p>	<p>Get Clean automatic dishwasher and laundry products. They are highly concentrated, biodegradable and have no phosphates or chlorine bleach.</p>	<p>Four. My first was a very basic Nokia in 2001.</p>	 <p>Pack lunch every day and use a home equity line of credit to save on interest.</p>
<p>KATE ZMURCHYK Founder of Earth's Revolution and part-time NAIT anatomy instructor PAGE → 38</p>	<p>Ecoholic by Adria Vasil; It guides me to so many other wonderful green products.</p> 	<p>I have owned three cellphones. The first had a huge battery and a talk piece that flipped open.</p>	<p>I stash cash around the house for smaller ventures and add a little every month to my big savings account.</p>

Answer more questions for a chance to win NAIT-branded items. Details at techlifemag.ca/contests.htm.

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SMALL CHANGE, BIG RESULTS

Do you think \$5 a week isn't enough to make a difference? Think again, says NAIT Physics instructor Pas Paskaran, who is championing micro-giving groups as a new way of giving. "Individually, there's a limit to how much each one of us can donate to charity, but when you have a group of 10 to 20 people, the impact is much greater," he says. In a micro-giving group, each member makes a small weekly donation to a charity of the group's choice.

A similar concept earlier this year brought together more than 200 micro-blogging Twitter communities from around the world for a Twestival, raising a projected US\$250,000 for a non-profit organization that builds wells in developing countries.

STORY BY
KRISTEN VERNON

PHOTO BY
JASON NESS

Paskaran and nine co-workers formed the inaugural micro-giving group at NAIT last spring. Paskaran has since helped form six other autonomous groups at NAIT and six in communities across Canada, including Calgary and Ontario.

So far, Paskaran's inaugural group, whose members each donate \$5 a week, has made three donations of \$650. The group has supported Edmonton's Youth Emergency Shelter Society,

a non-profit that serves youth in crisis, Edmonton's Bissell Centre, an inner-city drop-in centre, and through Heifer International, was able to help 10 families sustain themselves. Three families were given goats, another a beehive and six others were given chickens.

The various charitable causes brought forward by fellow members of the micro-giving group have inspired Don Stewart, high school partnership co-ordinator with NAIT's Department of Recruitment and Student Life. "It has motivated me to watch for other good causes.

I recently read about a group in Uganda providing recumbent bikes to disabled individuals wanting to start their own delivery businesses," he says. "One bike provides the means to support a family. How cool is that! I will bring this suggestion forward the next time we meet to decide how to disburse funds."

4

STEPS TO STARTING A MICRO-GIVING GROUP

1. Form a group with co-workers, friends or family. Paskaran recommends a group of between 10 and 20 people.
2. Decide how much members of the group will donate each week.
3. Decide which charity or charities the group will support.
4. Appoint someone to collect the money and make the donation. To receive tax receipts, identify the members of the group and their individual contributions when making the donation. Tax receipts are only issued for donations to Canadian charities.

← Pas Paskaran challenges others to consider the difference **\$5 a week** can make to people in need.



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PERFECTION IS IMPOSSIBLE EXCELLENCE IS NOT

CELEB CHEF ROB FEENIE SHARES HIS MANTRA WITH STUDENTS AS THE FIRST-EVER HOKANSON CHEF IN RESIDENCE.

STORY BY
**JENNIFER
COCKRALL-KING**

PHOTOS BY
**AMY BIZOVIE AND
JASON NESS**

"Each one of you is responsible for your course, but I'm here to support you," says Canadian culinary superstar Rob Feenie, slowing his usual rapid-fire chefspeak to a mere gallop. He's addressing a gathering of lucky and nervous 20-something Culinary Arts students in their crisp white chef jackets, gathered around a kitchen island prep station. With just over one hour to go before lunch, Feenie runs through the menu with military precision – portion sizes, cooking temperatures and plating instructions.

The eight-minute "preshift" is part game-plan review, part pep talk. The students are about to cook a three-course lunch for 90-some Edmonton restaurant pros, media and other invitees. The lunch is part of a three-day chock-a-block schedule set out for Feenie as NAIT's inaugural Hokanson Chef in Residence – a program designed to provide opportunities for students to learn from some of the best chefs in the world. He's already presided over three master class demonstrations for hundreds of eager student chefs, question and answer sessions, receptions, a dinner and a stream of interviews with local and national media. The lesson right now? A glimpse into the pressure and passion of cooking at the highest level. This isn't a classroom scenario. The over 90 hungry guests who will soon fill Ernest's dining room are the real deal.

"It'll be intense," Feenie warns. "I won't yell and scream at you. I'm not that kind of chef," he reassures, knowing that the alpha-male antics of chef Gordon Ramsay might be on their minds. "But I will say so if I see something that I don't like." Then, to end on a lighter note, he adds, "This is your show, you are responsible for your dish but I'm your wingman. That's how a kitchen works."

Having a chef of Feenie's calibre as a wingman is like winning the culinary lottery. Feenie, 44, has worked in a three-star Michelin restaurant in France and with the biggest-name chefs in the United States. Determined to shine the light on his home turf, Feenie opened his own restaurant, Lumière, in Vancouver in 1995, at the age of 29. Five years later, Lumière became the first freestanding restaurant in Canada to achieve the globally recognized Relais Gourmand designation and later the Traditions et Qualité: Les Grands Tables du Monde seal of approval. (Only a handful of restaurants in Canada have the former, Lumière is the only one to have the latter.) In 2002, he expanded with Lumière Tasting Bar, and, in 2004, Feenie's. During this time, he hosted six seasons of *New Classics with Rob Feenie* on Food Network Canada and authored three cookbooks (he is now writing a fourth).

Despite his impressive list of hard-won accolades, even Feenie admits his farthest-reaching accomplishment occurred in just one surreal hour. While about six million TV viewers looked on, Feenie bested uber-Iron Chef Masaharu Morimoto in 2005 on an episode of *Iron Chef America*. "The victory wasn't so much about me winning," says Feenie, grinning widely (chefs are competitive animals). "It was about showing that we have great talent in this country."



Chef Rob Feenie gives Culinary Arts students a glimpse into the pressure and passion of cooking at the highest level.



FEENIE'S SUCCESS IS THE RESULT OF DECADES OF LONG, UNGLAMOROUS HOURS SPENT LEARNING AND HONING HIS CRAFT.

Feenie's star-studded Rolodex also catches the students' attention. He's cooked for Sting and friends on the singer's yacht. Bill Clinton thinks he's a good golfer. And he hangs out with pro hockey players and the likes of Michael Bublé. But, Feenie makes clear, this is the result of decades of long, unglamorous hours spent learning and honing his craft.

"Perfection is impossible, but excellence isn't. If you aim for perfection, then, at the very least, you'll achieve excellence. If you only aim for excellence, then you might only reach good." Feenie repeats this several times over his three days at NAIT. Over and over, he talks about balancing the confidence needed to compete with the best in the world with the openness needed to learn and take criticism constructively.

Kimberly Farrugia, 19, listens intently to the advice. This second-year Culinary Arts

student hopes to own a pastry shop one day. "It's like he's giving us a heads-up on some of the experiences and pitfalls we will go through."

Feenie speaks frankly with the students about his own very public personal "kitchen nightmare" when, in 2007, he was forced to walk away from his award-winning restaurants after a dispute with his business partners proved unresolvable.

He also talks about the radical career shift he embarked on in 2008 when he became food concept architect for the B.C.-based Cactus Club Café restaurant chain. Feenie sets the culinary vision for the entire company, says Christy Wilson, director of marketing for the casual fine-dining chain. "He sets the direction, the tone, the look, the feel (local, fresh, organic when possible). In addition, he

Above, Rob Feenie works with students in one of the state-of-the-art kitchens in the Hokanson Centre for Culinary Arts. Right, seared scallop.

writes all his own recipes, trains the regional chefs and mentors our chefs at all levels." For him, it's another trail to blaze: how to reinvent and elevate this segment of the restaurant landscape.

The breadth and depth of his career means Feenie can speak to the different paths the culinary grads might consider, making him an obvious choice. "The long list of names for NAIT's first chef in residence became the short list, and then chef Feenie's name floated to the top quite quickly," explains Perry Michetti, associate dean of the School of Hospitality and Culinary Arts.

For John Hokanson, who, together with his wife Susan, has been a longtime benefactor of NAIT's culinary programs and whose \$1-million endowment created the chef in residence program, the real success of Feenie's visit was to see "how excited the students



were and what a fine job these students do" at functions such as the lunch.

Indeed, the students rise to the occasion. All three courses – the delicate scallop carpaccio, the crispy pan-seared salmon with green pea risotto and red wine sauce, and the simply seductive white chocolate crème brûlée – get rave reviews from the guests. A bit of culinary magic was created in the NAIT kitchen, and it may be awhile before these students have another opportunity to cook with a chef of this stature. After all, Feenie has made a career out of being a tough act to follow. ■



SCALLOP CARPACCIO →

AS FEATURED IN *FEENIE'S: BRUNCH - LUNCH - DINNER*

Cilantro oil*

INGREDIENTS

1½ CUPS CILANTRO, STEMS REMOVED

1 CUP OLIVE OIL

PINCH OF SALT

METHOD

Set up an icewater bath by filling a large bowl with cold water and ice.

Bring a pot of salted water to a boil. Add cilantro for 10 seconds, stirring to ensure all leaves are blanching. Immediately drain off hot water and place cilantro in a strainer. Plunge into icewater to stop the cooking process. When cool, remove cilantro from water and pat dry with paper towels. Place cilantro in a blender and blend on high until cilantro is puréed. Slowly add olive oil and salt and continue blending.

Will keep for two weeks refrigerated.

- RECIPE COURTESY OF CHEF ROB FEENIE

Tomato concassé**

1. Remove the core/stem end from the tomato; score an X in the skin on the bottom side. Place into boiling water for 10-15 seconds, remove from the water and place under cold running water.

2. The peel should now just slip off; if it does not, pop the tomato back in the boiling water for a few more seconds.

3. Cut in half, remove the seeds and rinse out.

4. Chop into ¼-inch dice.

- PROVIDED BY NAIT CULINARY ARTS PROGRAM

INGREDIENTS

4 LARGE SCALLOPS

6 TBSP EXTRA-VIRGIN OLIVE OIL

2 TBSP CILANTRO OIL*

PINCH EACH OF FLEUR DE SEL AND WHITE PEPPER

1 TSP FINELY CHOPPED JALAPEÑO PEPPER

¼ CUP TOMATO CONCASSÉ**

1 TBSP FINELY SLICED FRESH MINT LEAVES

1 TBSP FINELY SLICED CILANTRO

1 LIME, JUICE ONLY

1 LEMON, JUICE ONLY

METHOD

For this dish, buy the freshest scallops you can find. Here, I match scallops with both lime and lemon, as well as with cilantro oil and interesting herbs and spices.

Cut each scallop horizontally into four thin slices and arrange on four chilled plates. Cover with plastic wrap and refrigerate until needed.

To serve, remove the plastic wrap from the plates. Drizzle 1½ tbsp extra-virgin olive oil over each serving of scallops, making sure each slice is coated. Drizzle cilantro oil over scallops.

Season with fleur de sel and freshly ground white pepper. Sprinkle jalapeño, tomato, mint and cilantro over each scallop slice. Sprinkle with lemon juice and lime juice.

WIN A COPY OF *FEENIE'S: BRUNCH - LUNCH - DINNER*

Upload a photo of your favourite recipe to Flickr and add it to the NAIT group at flickr.com/groups/naif for a chance to win a copy of *Feenie's: Brunch - Lunch - Dinner*. The draw will take place July 15, 2009.

WEB EXTRA

Get a behind-the-scenes glimpse of the media blitz announcing NAIT's first chef in residence.

techlifemag.ca/feenie.htm

Knife SKILLS 101

USE THE RIGHT TOOL FOR THE JOB

There are different knives for different purposes in a professional kitchen, but there's always one knife that you'll end up using 75 per cent of the time. For me, it's my Kasumi sushi knife. I also like my Mac sushi knife.

KEEP THEM SHARP

Knives are like hockey skates: they're better and faster when sharp. You don't have to exert as much force with a sharper knife or risk having the knife slip, which it can do when dull. Remember: sharper knives are safer than dull ones; bigger knives as are also safer than smaller ones.

GRIP

Lose the "hammer grip!" Use a "pinch grip." Place your thumb on the part of the blade just in front of the handle – yes, thumb on the flat surface of the blade. Your forefinger goes on the other side, like you're pinching the knife blade near the handle. The other three fingertips will rest comfortably on the handle. Your palm should not be touching the handle.

THE NON-KNIFE HAND

The fingers should be curled, like you are holding a tennis ball. Rest the vertical part of the blade lightly against the knuckles and never lift the edge above your knuckles. Lead with your knuckles to push the food towards the knife. Keep your fingertips and thumb tucked back.

THE MOTION

Use a rocking motion, starting at the tip and moving towards the handle, not the other way around. Keep the tip of the knife in contact with the cutting board for maximum safety.

GET A GRIP: CHEF ROB FEENIE OFFERS TIPS AND TECHNIQUES TO HELP SHARPEN YOUR COOKING SKILLS.

– AS TOLD BY ROB FEENIE
TO JENNIFER COCKRALL-KING



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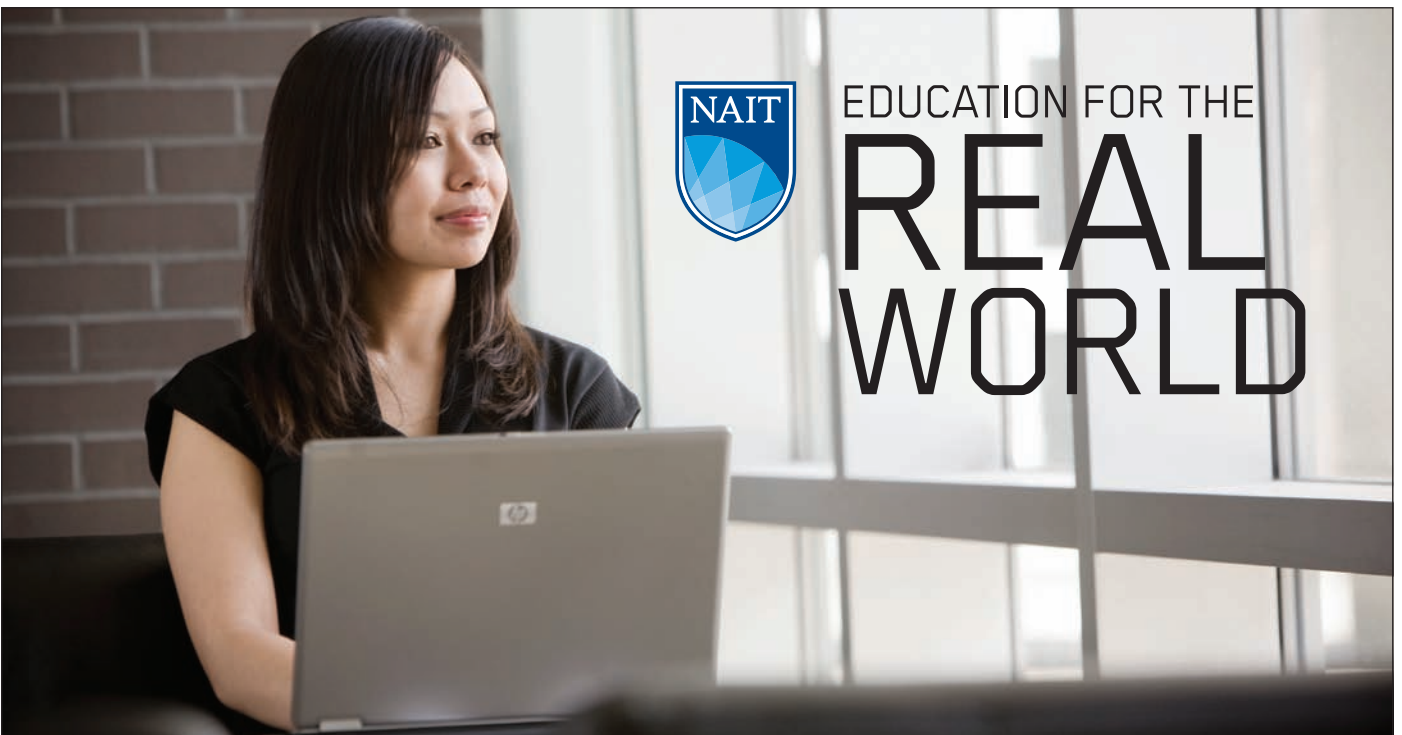


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Observe lake vistas, flora and fauna remotely on the Big Lake Environment Support Society webcam, featured in the inaugural issue (Prototype Challenge Hatches Online Bird Watching, p. 27, V1.1, 2007).

techlifemag.ca/birdwatching.htm

Explore forestry camp with Forest Technology student and blogger Leslie Chivers. Read Chivers' postcard from his six-week stint in the woods.

techlifemag.ca/forestry.htm

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Arlene Dickinson of the *Dragons' Den* offers consumers and entrepreneurs advice for making the best of the economic downturn.

techlifemag.ca/economic.htm

Certified Financial Planner Jeff Shigehiro (Management '03) of Shigehiro Financial Planning offers advice for your portfolio.

techlifemag.ca/investing.htm

Learn about the advantages of buying local products with Corbin Tomaszewski of Food Network's *Restaurant Makeover*. Tomaszewski (Cooking '92) was also featured in the inaugural issue (Corbin in the Kitchen, p. 58, V1.1, 2007).

techlifemag.ca/buylocal.htm

→ EXPERIENCE SOMETHING NEW

Experience Cuban culture through the eyes of Machinist chair Stewart Cook (Machine Shop certificate '87, Machinist apprenticeship '90). Cook writes his postcard while on a day off from working with a NAIT international partner.

techlifemag.ca/cuba.htm

Discover savoury experiences served up by NAIT grads in the latest Platings Directory.

techlifemag.ca/platings.htm

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ohaa.ca

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www.nait.ca/arns

ALUMNI, FRIENDS AND PARTNERS

5 Support a student - donate a scholarship.
Student Awards
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MOBILE EVOLUTION

COLIN POLANSKI, ASSOCIATE CHAIR OF THE TELECOMMUNICATIONS PROGRAM, TRAINED ON THE GENERAL MOBILE TELEPHONE SERVICE WHEN HE WAS AN APPRENTICE AT NAIT IN THE MID-'80S. POLANSKI DUSTS OFF THESE RELICS FOR A BRIEF LESSON ON THE GENESIS OF THE CELLPHONE.

1946 GENERAL MOBILE TELEPHONE SERVICE



Introduced in St. Louis in 1946, the Mobile Telephone Service was the first practical mobile radio telephone, essentially a two-way radio. Calls were operator assisted, and with just a few frequencies, only a few calls could be placed at once.

In the '80s, a facsimile mobile interface device could be used to fax with this radio telephone. Bell Canada introduced the first commercial mobile telephone service in Canada in 1947. Popular in vehicles and in remote locations in the oilpatch where landlines didn't exist, mobile radio telephones were still used in Alberta as late as 1999.

The second-generation Improved Mobile Telephone Service (IMTS) was introduced in 1964. While it allowed users to skip the operator and place a call directly, like its predecessor the IMTS had an open speaker, allowing anyone within earshot to hear the call. The system could only handle a limited number of subscribers and wait lists were long – five to 10 years according to a 1984 issue of *Communications News*.

1964 IMPROVED MOBILE TELEPHONE SERVICE



1980s

NOVATEL'S AURORA-400 (AUTOMATIC ROAMING RADIO)

Alberta Government Telephones, now Telus, launched North America's first 400-megahertz cellular system in 1982 to serve the province's resource industries. The system divided geographic units into cells, enabling neighbouring areas to use the same frequencies at the same time without interference. However, the system couldn't hand off calls between cell towers. Features included voicemail and call forwarding. With no open speaker, users could make private phone calls. NovAtel's Aurora-400 (Automatic Roaming Radio) was inserted into a briefcase and weighed about 10 pounds.



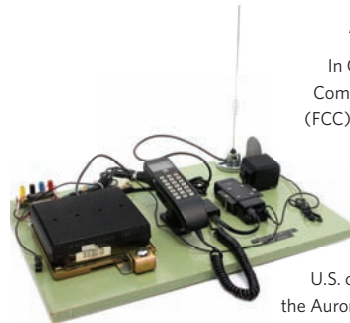
ANALOG CELLULAR

In October 1983, the Federal Communications Commission (FCC) authorized a commercial analog cellular system in Chicago – the first in the United States. While Alberta Government

Telephones beat

U.S. companies to market with the Aurora, the U.S. system, which

operated on the 800 megahertz band of the radio spectrum, went one step further, enabling calls to be handed off between cell towers – the foundation of all cellular networks.



MOTOROLA DYNATAC

Motorola's Martin Cooper made the world's first phone call on a prototype of the first truly portable cellphone in 1973, but it wasn't until 1983 that the FCC approved the Motorola DynaTAC, also known as "the brick." The phone, which weighed 28 ounces and had a battery that allowed for 30 minutes of talk time and eight hours of standby time, went on sale to the public in 1984. Cellular service launched in Canada in 1985. Theoretically, this phone could still be used in Alberta as late as Oct. 1, 2008, when Telus finally ended analog service.



2008 72 per cent of Canadian households have access to at least one cellphone. Albertans lead the way at 82 per cent.

– KRISTEN VERNON

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