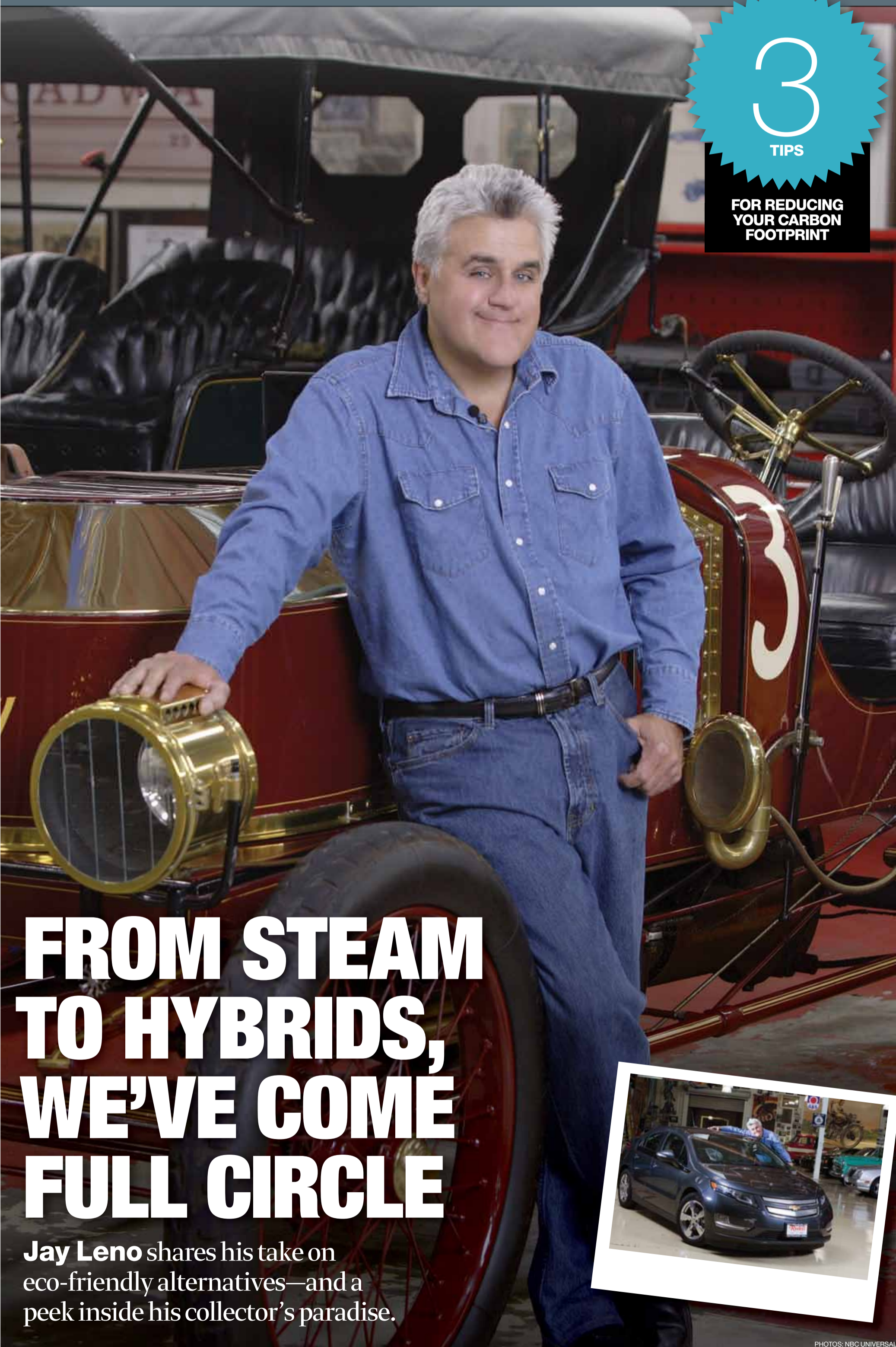


# SUSTAINABLE TRANSPORTATION

**3**  
TIPS  
FOR REDUCING  
YOUR CARBON  
FOOTPRINT



## FROM STEAM TO HYBRIDS, WE'VE COME FULL CIRCLE

**Jay Leno** shares his take on eco-friendly alternatives—and a peek inside his collector's paradise.



PHOTOS: NBC UNIVERSAL

**Clearing the air**  
What initiatives are being taken by the air travel industry?



**Carbon offsetting**  
How you can cause positive change



## CHALLENGES



TIP

1

A GREENER  
COMMUTE  
GOES MILES  
IN REDUCING  
EMISSIONS

THE FRESHER ROUTE  
Choosing alternative methods of transportation is just one of the ways you can personally address our dependence on fuel.

The transportation industry continues to be locked in a power struggle. Consumers know that **alternative methods** are the way of the future, but how do we ditch our **dependence on traditional fuel**?

# What are the consequences of your commute?

It's no secret that North American transportation functions via gasoline. Our dependence on this traditional fuel has long been a hot-button issue, as one-quarter of our greenhouse gas pollution comes from our tailpipes. The way in which we use our personal vehicles accounts for most of this. This raises the question, how can we effectively reduce our addiction to emissions and move forward into a sustainable future?

Cutting pollution from our cars proves to be a daunting challenge. Our cities and vast suburbs were designed to accommodate the automobile. We have under-invested in public transit in cities across Canada, leaving many commuters living in the suburbs with no choice but to drive to work.

## Congestion comes with a cost

The problem has hit our pocketbooks, with rising gas prices and lost productivity due to gridlock. Congestion in the Greater Toronto Area, for example, costs the region \$6 billion annually.

It's also a public health issue. Air pollution at nose level—not just carbon dioxide floating in the atmosphere—is causing asthma rates to rise. Obesity and diabetes are increasing amongst residents of suburbs where road culture and poor urban design discourages walking and cycling.

By comparison, cities in Europe have established traffic-free zones to improve air quality and enable rapid travel by transit, foot or bicycle.

## A cleaner commute

An Ontario study completed by the Pembina Institute in 2010 found that a regional transit system is the most effective way to reduce pollution from personal vehicles. With 80 percent of Canada's population now living in urban areas, moving people around sustainably needs to become a government priority. Yet Canada is the only G8 OECD nation without a national transit strategy.

Road-based passenger travel produces two to four times more pollution per kilometre than rail-based travel, such as subways, light rail or even diesel rail. Every commuter who chooses to ride the rails rather than driving a single-occupancy vehicle reduces the amount of smog-causing air pollution by 90 percent.

## Energizing alternatives

We are even seeing developments towards sustainable transportation options on an energy level. The energy and fuels that are used to power our vehicles are moving towards cleaner, greener options. In provinces such as British Columbia, Manitoba and Quebec, electricity systems are already largely powered by renewable energy. Even in provinces that are still heavily dependent on coal, like Alberta and Saskatchewan, steps are being taken to reduce pollution and shift towards renewable sources.

## Going the extra mile

Hybrid and electric vehicles



**Cherise Burda**  
Transportation Director  
The Pembina Institute

»

“Our cities and vast suburbs were designed to accommodate the automobile. We have under-invested in public transit in cities across Canada...”

are beginning to emerge as viable options—heavily reducing emissions while maintaining long travel ranges. And while not everyone can afford an electric vehicle, growing trends towards smaller more fuel-efficient vehicles will help keep our air clean and reduce our pollution.

Similar developments have been made in the coach, rail and aerospace industries—where we continue to see improvements in fuel efficiency, weight reductions and emissions reductions.

Yet while technology is making our transportation options cleaner and more sustainable, we still need to address other environmental and quality of life problems from our auto-dependent system. Time lost in gridlock, farmland lost to pavement and even the types of food we consume are just a handful of issues that affect our overall sustainability.

We need actions to reduce the amount of time Canadian drivers spend behind the wheel and the distance we must drive. We need to see further improvements in the automotive, rail and aerospace industries. We need actions to encourage sustainability in the sectors of energy, farming and alternative fuels. Whether it's through incentive programs such as pay-as-you-drive insurance, business incentives for implementing sustainable technology, or revenue from carbon taxes and road tolls going to build viable public transit—we need to change lanes and move toward sustainable transportation. Our future depends on it.

# Neutralizing emissions with carbon offsetting

**Climate change is a serious problem, caused primarily by the carbon dioxide released from burning fossil fuels like oil, coal, and gas. But there are things we can do about it—like choosing to go carbon neutral.**

Going carbon neutral is an easy way to take responsibility for the greenhouse gas emissions we create every time we drive our cars, take a plane or turn on our computers. It's based on the principle that, since climate change is a global problem, an emission reduction made elsewhere has the same positive effect as one made locally.

Here's how it works: if you add polluting emissions to the atmosphere, you can effectively subtract them by purchasing carbon offsets. Carbon offsets are simply credits for emission reductions achieved by projects such as wind farms, solar installations, or energy efficiency retrofits. You can purchase these credits and apply them to your own emissions to reduce your net climate impact.

## Why go carbon neutral?

To solve the problem of climate change, we all need to take account of our personal carbon emissions and make continued efforts to reduce them ourselves. But it is impossible to reduce our carbon emissions to zero, no matter how hard we try. Going car-

bon neutral by purchasing carbon offsets is a practical and affordable way to do something about those remaining emissions.

In addition, by voluntarily calculating and assigning a cost to your carbon emissions, you can begin to prepare for the inevitability of an economy in which carbon dioxide and other greenhouse gases are regulated and taxed. Whether you are a business or an individual, this is an important step towards managing your carbon emissions efficiently and identifying potential for reductions and savings.

Purchasing high quality carbon offsets from projects such as wind farms also helps support the transition to a sustainable energy economy by providing an additional source of revenue to developers of renewable energy.

While voluntary offset programs should not be seen as a substitute for comprehensive government regulations to reduce greenhouse gases, they are a step in the right direction, and an opportunity to demonstrate leadership on climate change.

Carbon offsets also offer flexibility, as you can choose to offset just one—or all—of your major emission sources. For example, you can purchase carbon offsets to mitigate the emissions from your air travel, automobile use, or home heating. If you wish to offset the emissions from electricity, you can use either carbon offsets or a spe-

cial product known as a Renewable Energy Certificate (REC), which is like purchasing renewable energy.

In the resources section below, you can find links to calculators and vendors of carbon offsets and RECs.

## Who's doing it?

Many people and organizations are going carbon neutral (sometimes referred to as “climate neutral”). Here are just a few examples:

- Major sporting events such as the World Cup Soccer are going carbon neutral, as are many athletes.
- Airlines and travel agents are starting to offer customers the option to offset their flights, and some airlines are offsetting all of their flights. Many hotels are also providing carbon neutral accommodations.
- Movie studios have offset the emissions from the production of feature films and documentaries, and media companies such as BskyB, MTV, and News Corp are offsetting the emissions associated with their broadcasts.
- Major conferences (e.g. United Nations World Climate Research Programme) and conventions have offset their emissions
- Organizations as diverse as Wells Fargo, Whole Foods, the EPA and the city of Vail, CO have purchased large quantities of renewable energy certificates to offset their electricity use
- Businesses like HSBC, Swiss Re,

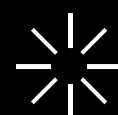
Google, Nike, Dell, and Vancity have committed to making their entire operations carbon neutral. Other companies are offering carbon neutral products or services, such as carpeting, coffee, and deliveries.

- Some utilities are offsetting their emissions and allowing their customers to purchase carbon neutral energy.
- Some countries such as Iceland, New Zealand, Norway, and Costa Rica are aiming to be entirely carbon neutral.
- The World Bank has committed to being carbon neutral.
- Schools and churches are voluntarily offsetting their emissions.
- Rock bands like the Rolling Stones, Coldplay, and Dave Matthews Band have offset the emissions associated with their concerts and albums.
- Many people are now offsetting their weddings (including air travel by guests).

The list continues to grow—best-selling books, grocery store chains, cities, and even countries are becoming carbon neutral. Many celebrities are also choosing to go carbon neutral in their personal lives to help raise awareness about climate change.

COURTESY OF DAVID SUZUKI FOUNDATION

editorial@mediaplanet.com



## WE RECOMMEND



**Driving force for cleaner cars**  
Talk show host Jay Leno advocates for daily hybrid driving.

PAGE 4

“You could conceivably get hundreds of miles per gallon if you live 30 miles from work... because your gas engine would never kick in.”

## Carbon offsetting p. 2

How you can contribute positively to the environment based on your purchases.

## Clearing the air p. 6

How Toronto's Pearson International airport is leading the way in sustainable air travel.

# MEDIA PLANET

SUSTAINABLE TRANSPORTATION  
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## DID YOU KNOW?



## The David Suzuki Foundation's program

As part of its ongoing commitment to sustainability, and to demonstrate that taking responsibility for one's greenhouse gas emissions is straightforward and inexpensive, the David Suzuki Foundation has implemented a greenhouse gas management program. The program is based on a user-friendly guide published by the David Suzuki Foundation that makes it easy to calculate an office's greenhouse gas emissions. Due to the many problems with tree planting projects, the David Suzuki Foundation only purchases offsets from energy efficiency and renewable energy projects that meet The Gold Standard.

## You can do it too!

It's easy to go carbon neutral—all it takes is a few simple steps.

After you've begun to offset your own emissions, encourage friends and family to do the same. You can even purchase carbon offsets as gifts for other people. Also, choose to support businesses that are either carbon neutral, or offer carbon neutral products or services. If the businesses you are dealing with aren't yet carbon neutral, ask them to consider it. Finally, write a letter to your political leaders and let them know you've taken responsibility for your greenhouse gas emissions, and encourage them to enact legislation making it easy for everyone to do so.

While reducing greenhouse gases should always be the first priority, purchasing carbon offsets is one way to encourage the transition from fossil fuels to clean energy, put a price on carbon, and show your support for action on climate change.



**CREATING POSITIVE CHANGE**  
You can reduce your vehicle's emissions by changing your driving behaviours.

# ON THE ROAD TO REDUCED FUEL USE

**Cars and trucks are among the biggest contributors to the heat-trapping emissions that cause global warming.**

About 12 percent of Canada's greenhouse gas emissions come from private automobiles, and up to a quarter come from road transportation in general. That makes driving a good place to start in confronting one of the most serious challenges humans face.

Canada and the U.S. just announced plans to enact fuel-efficiency standards for new cars and light trucks manufactured in the two countries. Canada is expected to match the U.S. standards, which will require all cars and trucks built by a company to get an average of about 35 miles per gallon, or six litres per 100 kilometres, by 2016. Canada's government estimates that will lead to a 25 percent reduction in vehicle emissions in 2016 compared to 2008. The government's next step should be to require more zero-emission vehicles powered by clean-energy sources.

**Stepping out of the driver's seat**

The new-vehicle regulations are good for the environment and the economy—but people who don't

plan to buy new cars can also reduce their driving-related impact on the environment. Maintaining and driving a vehicle efficiently can make a big difference. Of course, the best way to reduce fuel consumption is to get out of your car. Walking, cycling, or using public transit mean fewer cars spewing emissions and less gridlock, which causes pollution as cars waste fuel while idling.

Getting out of the car isn't always possible, though, especially in rural areas not served by public transit, where travel distances and weather often make walking and cycling impractical. Designing communities around people instead of cars by investing more in public transit and less on roads and freeways is important in the long term, but for now drivers can reduce their current gas consumption by as much as 20 per cent with a few eco-driving tips—something the David Suzuki Foundation's Quebec office learned with its Drive Smart, or Roulez Mieux, campaign.

As with the new government fuel standards, adopting better driving habits demonstrates that doing what's right for the environment also makes good economic sense. Beyond saving money on gas, drivers can reduce wear on their cars, saving on



**"As with the new government fuel standards, adopting better driving habits... also makes good economic sense."**

**David Suzuki**  
David Suzuki Foundation

maintenance and car-replacement costs.

One of the first things you can do is make your transportation more efficient through planning. Instead of making separate trips to get to work and the store, combine the journeys. Joining a car pool is also a great idea.

Keeping your vehicle properly maintained, with regular tune-ups, including air-filter and oil changes, and tires in good shape and properly inflated will allow you to go further on less gas.

**Road rationale**

Driving habits also help. Avoiding rush hour and driving defensively can help ensure that the fuel you burn will get you to your destination more quickly and efficiently. Shutting off the engine if your car

is stopped for more than a minute makes sense too. Slowing down also helps. Going over the speed limit won't get you to your destination much faster, but it will burn more fuel.

Other good habits include keeping your trunk clean—as less weight requires less fuel to transport—and using the car's accessories sparingly.

It's up to all of us to do what we can to reduce the emissions that contribute to climate change. That's especially true because governments are often slow to act and don't always go far enough. Sometimes they need a bit of a push, from individuals, communities, businesses, or even other levels of government. For example, the U.S. emissions standards were

developed in response to tougher standards enacted by the state of California and adopted by other states. (In Canada, Quebec was the first province to implement tougher fuel standards.)

As fossil fuels become scarce, and as our knowledge of the impacts of pollution and global warming increases, the benefits of doing all we can to use less gas just keep adding up. For the new fuel standards, savings at the gas pump will even offset the higher costs of the new fuel-efficient vehicles. The new standards will also lead to more jobs, as new technologies are developed.

We have a long way to go in resolving the issues around our love affair with the car and environmental destruction, but at least we're getting started.

## INSPIRATION

TIP

2

HYBRID CARS PROVE TO BE IDEAL FOR DAILY CITY DRIVING



**COLLECTORS' PARADISE**  
Jay's enviable garage boasts over 200 exotic vehicles, including this 1913 Mercer.  
PHOTO: NBC UNIVERSAL

**Late-night talk legend Jay Leno's** passion goes beyond chatting up Hollywood's biggest stars—he boasts one of the most impressive car collections on the planet. His love for all things auto doesn't mean he's your regular gearhead, however—he's also an advocate for **environmental transportation alternatives.**

# Honing in on hybrid history

## LEADER TO LEADER

**It's no secret that Jay Leno loves cars. As the proud owner of over 200 classic and contemporary vehicles, Leno has learned lots about automotive history in the process.**

As the industry takes strides to create more sustainable modes of transportation, Leno offers his insight into electrics, hybrids and greener fuels of the future.

### Back to basics

Although electric vehicles are becoming increasingly popular today, Leno is quick to note that the concept of utilizing electricity to power cars dates back almost a century. "I like the history of transportation. So at the turn of the last century it was down to steam, electric and combustion and it was kinda, which way was it going to go?" he explains. "But by 1906 or so, it was fairly obvious that the combustion engine

was going to win out. You know, it's interesting that a lot of people complain about the car. It's not the car necessarily. It's the fuel we use. For example, to throw away a hundred and fifty years of internal combustion technology seems silly."

Leno in fact owns one of the first electric attempts, a 1909 Baker Electric Car. As for newer designs, Leno owns a Chevy Volt—a car he touts as being the current key to sustainable transportation. "I mean to me, the Chevy Volt is sort of the answer right now. Most people that have an electric car have to have another car, because the electric car will only get you 30 or 40 miles or maybe 50 miles. But you need a car in case you know, your electric car's being charged and you have to go the hospital, you have to drive to Las Vegas, your plane is cancelled—something like the Chevy Volt, for example mine, I'm trying to go a full year on the same tank of gas."

### Fuel for change

According to Leno, the future of sustainable transportation is as much in

ㄗ

"I like the history of transportation. So, at the turn of the last century, it was down to steam, electric and combustion..."

the fuels as it is in the vehicles. While giving a 20-minute speech in an auditorium in Los Angeles, Leno left a BMW hydrogen-powered car running on stage, and let a glass fill up with water—the by-product of hydrogen fuel—from the tailpipe. To drive home his point about the cleanliness of renewable fuels, he proceeded to drink it. "I mean it wasn't the best tasting water, but it showed, let's just find a better fuel, rather than re-invent the wheel." As well as finding cleaner fuels, Leno propagates hybrid technology to use them effectively.

"We need to make diesel more accessible here. It's just not a fuel that we use in this country very often, it doesn't have a very good reputation. But diesel works pretty well—I was in Germany last week and I drove a Volkswagen concept car that got 251 miles per gallon—and that was a diesel. Diesel hybrid, same type of deal. So I think for the foreseeable future Hybrid is the way to go."

### The future of sustainable transportation

As the automotive industry turns to fuels that will lessen vehicles' impact on the environment, so too are methods being developed to incorporate it into the solution. Leno points to one particular experiment that makes use of seawater and radio waves to create power. "The trouble is it just takes more power to make it explode than the explosion. But, ok. But here's seawater as a fuel? Who even thought of that? Ok, so I mean that's just an example of things that are out there." And as for Leno's vision for greener cars and fuels? Think outside the box. "You know, you get stuck in this idea that electric cars have to be small and boxy, and you know, high performance cars have to be gassy. You have to throw all that out the window and just start with a whole new clean sheet of paper."

# INSPIRATION



2



1



3

1. Jay frequently chooses his hybrid Chevrolet Volt as his commuter car.  
 2. Jay's custom-made Eco Jet.  
 3. The collection includes many pristine examples of auto history, such as this 1937 Fiat Topolino.  
 PHOTOS: NBC UNIVERSAL



**DON'T MISS!**

## Action you can take

### Go electric or hybrid

**1** Reduce carbon by making the move to a sustainable electric or EREV hybrid.

### Think small

**2** Can't go hybrid or electric? Choose a smaller, more fuel-efficient vehicle for your next purchase. It will help you save gas money too.

### Hop on the bike

**3** Each Canadian makes an average of 2000 car trips of less than three kilometers each year. Walk or run your errands and reduce your "waist".

### Leave the car at home just one day a week

**4** This can cut your pollution by up to 20 percent!

### Take the road less traveled

**5** Choose food and products that are grown or made locally and have not traveled long distances. GHG emissions from freight trucks are growing faster than for any other sector in Canada.

### Explore our backyard

**6** Vacationing close to home can save stress and lighten the load on your wallet and the environment. If you are planning a longer trip, try carbon offsetting to neutralize those emissions.

COURTESY OF THE PEMBINA INSTITUTE  
 editorial@mediaplanet.com



# HOW DO YOU ACHIEVE A WORLD FIRST? BY PUTTING THE WORLD FIRST.

The Chevrolet Volt is the planet's first and only extended range electric car. Every day, we're building greener vehicles around the globe. With more recycled content, fewer carbon emissions, and incredible fuel-efficiency. We'll continue to create cars with the planet in mind. From gas-friendly to gas-free. This is our promise. This is Chevrolet now.



**DRIVING OUR WORLD FORWARD**

**CHEVROLET.CA**

MOBILE ENABLED

## PRODUCT SHOWCASE

**TOYOTA PRIUS**

The Prius name is synonymous with fuel-efficient and responsible motoring. Delivering the best fuel efficiency of any SUV, Crossover or Wagon in the market today we felt the Toyota Prius has earned its spot in our "Top Three Sustainable Vehicles."

**NISSAN LEAF**

The all-new Nissan Leaf enters the pack with the world's first affordable, zero-emission car. No gas, no tailpipe, and a 160 kilometre range give the Leaf top marks when it comes to selection. Quiet, smooth, and big on space we welcome Nissan's Leaf to our Top Three.

**CHEVROLET VOLT**

Establishing a new segment in the market the Chevrolet Volt is designed to provide the benefits of an electric vehicle without the range limitations associated with other electrics on the market. It's provides a pure electric range between 40 and 80 kilometres—but has an extended range of 609 kilometers with fuel use. As an electric with no compromise, Chevrolet's Volt launches into our Top Three.



ILLUSTRATIONS: ISTOCK  
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*The first green aviation initiative in Canada*

NEWS

TIP  
**3**  
RESEARCH AND COMPARE SUSTAINABLE TRAVEL METHODS



**AEROSPACE ADVANCEMENTS**  
Important research initiatives are addressing the negative consequences associated with air travel, such as noise and emissions.

NEWS

Advancements for Canada's aircrafts

**Canada's largest airlines are committed to working through their industry association, the National Airlines Council of Canada (NACC), to reduce the environmental impact of air travel.**

The council's member airlines—Air Canada, Air Transat, Jazz Aviation and WestJet—are pooling their knowledge and together making great advances in such areas as fuel efficiency, emissions reduction, noise abatement, waste reduction, and better handling of glycol for de-icing.

Although aviation accounts for only two percent of all fossil fuel-related emissions worldwide, NACC members accept their responsibility to help curb overall GHG-emissions and for this reason are making concerted efforts to combat climate change.

Air travel is a global business and the International Civil Aviation Organization (ICAO) has been tasked to take the lead in setting standards for aviation emissions worldwide. NACC supports the work of ICAO and endorses a multilateral, sectoral approach as the best way to ensure the world's airlines work together to reduce emissions both domestically and internationally.

Closer to home, NACC airlines continue to institute policies, procedures, and programs that improve fuel use. The most effective of these has been the investment in new, more efficient aircraft through fleet renewal programs.

**Fresher fleets**

Advances in aircraft and engine design have been driving fleet renewal by making planes that use fuel more effectively resulting in significant efficiency improvements. Other benefits of this technological progress have included reduction in noise, particulate matter and NOx (i.e. local air quality).

Lesser-known methods of reducing aviation emissions include improvements in aircraft operations and maintenance, cargo and baggage operations, in-flight catering, energy-efficient ground equipment and the introduction of biofuels.

Of particular note is performance-based navigation (PBN), an emerging air traffic management technology strongly supported by the NACC, which is a shift from sensor-based to performance-based aircraft navigation.

Not only does PBN improve safety, reliability, accessibility and efficiency, it also plays a significant role in lowering the environmental impact of air operations and mitigating noise. In Canada, where NACC members have made significant investments in new and replacement fuel-efficient aircraft, PBN is considered the industry's current greatest opportunity to markedly enhance environmental performance and reduce fuel consumption and emissions.

As more and more aircraft become equipped with the most sophisticated navigation and flight management systems available, they can only be effective if governments and relevant authorities around the world implement air traffic control and other procedures that are up-to-date with the capabilities of modern aircraft.

While many challenges remain, significant strides have been made in reducing the environmental footprint of commercial aviation. This is only the beginning for Canada's largest carriers and NACC remains committed to ongoing efforts to improve the industry's environmental performance.

*National Airlines Council of Canada*  
The National Airlines Council of Canada is a trade association founded by Canada's largest commercial airlines to ensure safe, sustainable, secure and competitive air travel for Canadian consumers.

COURTESY OF THE NACC  
editorial@mediaplanet.com

# Clearing the air: Reducing air emissions

**Question:** How can pollution from air travel be kept to a minimum despite an ever-increasing reliance on the method of travel?  
**Answer:** A new initiative has mobilized crucial research to make every aspect of air travel sustainable.

**GARDN (Green Aviation Research & Development Network) is a business-led network of centres of excellence, with a budget of \$24 million over four years (2009-2013).**

Its mandate is to promote environmental research for the benefit of the Canadian aerospace industry. GARDN is the first Canadian aerospace initiative that focuses on reducing the environmental footprint of this industry.

The initiative addresses issues that are fundamental to the Canadian aerospace industry's future and is of concern to all who are committed to its growth and success. This network creation is the result of the Canadian aerospace industry's determination to protect the environment and to take on a leadership role in research in the area of green aviation. Today, the challenges for Canada's Aerospace Industry are to stay competitive in the face of aggressively and well-funded international research and technology program. The pursuit of green



"The initiative addresses issues that are fundamental to the Canadian aerospace industry's future..."

**Sylvain Cofsky**  
Executive Director, GARDN

aircraft technologies is a key factor in maintaining our industry's position among world leaders.

**Reaching new heights**

The economic potential is huge! Right now, aviation transports over 2.3 billion passengers annually and the traffic growth is increasing at an average of five percent annually. The world's 2,092 airlines have a total fleet of nearly 23,000 aircrafts and the replacing costs—or revenues—of new aircraft to enter fleet between now and 2020 is \$1.3 trillion!

But there are negative consequences to this growth. Even if aviation accounts for only two percent of worldwide CO2 emissions from fossil fuel use, as aviation grows to meet increasing demand, the CO2 emissions could increase, if nothing is done, to three percent or even five percent in 2050.

While the aerospace industry is

not among the worst offenders in terms of Green House Gas emissions, the industry has decided to adopt development objectives that are coherent with the principles of sustainable development promoted by the United Nations. The Canadian aerospace industry's commitment towards protecting the environment is further evidenced by its collective goal of reducing its CO2 emissions in half by 2050, while reaching carbon neutral growth by 2020 and improving fuel efficiency by 1.5 percent per year between 2009 and 2020.

**Cleaning up the skies**

In creating GARDN, the Government of Canada has recognized the importance of being at the forefront of green aviation R&D with world leaders who are defining the future of the aerospace industry. This initiative is a cornerstone of the Canadian industry's future. The seven targeted

research themes—namely, noise and source emissions reduction, materials and manufacturing processes, airport and aircraft operations, alternative fuels and product lifecycle management—will have an impact on every part of the aerospace supply chain.

Through this initiative, the Canadian industry is mobilized as this network has allowed unprecedented partnerships between Canadian firms in critical research areas. This increases the research-development capacity of players from our industry and strengthens Canadian know-how in green technologies for the aerospace industry. The GARDN industrial leaders are four major players in Canada's aerospace industry: Bombardier Aerospace, Bell Helicopter Textron Canada, Pratt & Whitney Canada and Esterline CMC Electronics. They are joined by nine leading Canadian universities as well as by several well-established SMEs (such as Exova, Aercoustics, MDS Aero, Mecanum and Quantis).

The game-changing nature of this research makes it a must for all industry players—industry, research and academic community and governments—to be actively engaged at the outset. They have to define and explore new avenues and solutions to the green aircraft of tomorrow.

## Clearing the air at Pearson International

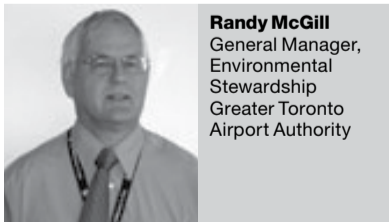
**The focus on "going green" has infiltrated various levels of consumerism and industry.**

No doubt you've seen products touted as "sustainable"—even architecture has garnered recognition for "green" building practices. Now, the initiative is taking to the skies with environmentally responsible airports—and leading the way is Toronto's own Pearson International Airport.

When you think of an international airport, it is difficult not to imagine vast expanses of tarmac and concrete, not to mention the fuel-gulping commercial jets that are so essential to running our global economy. But if you look a little bit closer you will see that, environmentally, there is more to Pearson than meets the eye.

**Pearson's projects**

Many may be unaware that approxi-



**Randy McGill**  
General Manager,  
Environmental  
Stewardship  
Greater Toronto  
Airport Authority

mately one third of Pearson's land is constituted by grasslands, creeks and agricultural valleys that are home to a wide variety of vegetation and wildlife. Maintenance of these ecosystems is part of the Greater Toronto Airport Authority's (GTAA's) Environmental Management System.

This system, which was the first Environmental Management System (EMS) for airports to be certified by the International Organization for Standardization, includes a number of important initiatives. One of the biggest is their Stormwater Management System, which has been hugely successful in reducing the number of pollutants leaving Pearson Airport

in the form of run-off. The GTAA has also invested in the future of our air through their 20/2020 Sustainability Strategy, which aims to reduce greenhouse gas emissions by 20 percent by 2020. In the last five years, they have reduced emissions by about 10 percent—an excellent start by anyone's standards.

According to Randy McGill, general manager of environmental stewardship at the GTAA, the organization enjoys a 60 percent recycling rate, which ranks among the highest airport recycling rates in North America. It also sports a state-of-the-art firefighter training facility that has been designated as a "zero waste" building.

**Going green together**

As if this were not impressive enough, the GTAA has spearheaded the development of "Project Green", an eco-business initiative designed to facilitate collaboration among businesses, governments and com-

munities to develop and implement cost-effective and environmentally-friendly business strategies on the land surrounding Pearson Airport. One of Project Green's priorities is the construction of buildings, such as the aforementioned training facility, that have been certified by the internationally-recognized Leadership in Energy and Environmental Design certification system. It is this sort of pioneering spirit that earned the GTAA the Airports Council International North America 2009 Environmental Achievement award for special innovative projects in sustainability.

The partners of Project Green are driven by one central tenant—that if we work together, both the environment and business can thrive indefinitely.

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# Smart Planning Connects Clean Electricity Advantages and Electric Vehicles



By Don MacKinnon  
President  
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British Columbia and Quebec are using their low-carbon electricity to create electric vehicle manufacturing capability while reducing greenhouse gas (GHG) emissions from their largest emitter; transportation.

A 2008 study prepared for the National Round Table on the Environment and the Economy ("NRTEE") found that in order to achieve GHG reductions of 20 percent below 2006 levels by 2020, and 65 percent below 2006 levels by 2050, substantial electrification would be required in all sectors. Market share of passenger plug-in hybrid vehicles would rise to 13 per cent by 2020 and reach 83 per cent by 2040.

As a result, electricity demand forecasts need to consider the total requirements of electric vehicles as well as charging behaviours and their impact on base-load and peak electricity demands.

Other significant electrification opportunities that need to be considered, when assessing future demand, include industrial equipment, airport support equipment and vehicles, agricultural and landscaping equipment, railroads and public transit.

Unfortunately Ontario's disjointed policy approach to energy, climate change and the economy is unnecessarily driving up electricity prices and eroding our global competitiveness.

Rather than leveraging our clean energy advantages and technological successes, Ontario is spending billions more on intermittent wind and solar energy along with the complex and expensive infrastructure needed to deliver

this electricity – when it happens to be producing. New natural gas plants will be built to provide back-up power over 70 percent of the time and GHG emissions will rise as Ontario's reliance on environmentally questionable U.S. shale gas increases.

Connecting clean, reliable and affordable electricity to electric transportation is key to the future economic success of Ontario.

Expeditious investment in GHG emission-free nuclear, hydroelectric and carbon-neutral biomass-fuelled generation, linked to the electrification of Ontario's transportation sector, is the most cost-effective way to dramatically reduce GHG emissions while supporting tens of thousands of high-value jobs and enhancing energy security.

Ontario's hydroelectric and nuclear generation have provided one of the lowest-cost and lowest-carbon electricity systems in the world. For over 47 years, Ontario-made CANDU reactors have been safely producing reliable, affordable GHG emission-free electricity 24/7. On an annual basis, Canada's nuclear fleet avoids 90 million tonnes of GHGs, equivalent to the exhaust of about 18 million cars or about 12 percent of Canada's emissions.

Ontario's support for the refurbishment of our existing nuclear fleet, building new CANDU reactors and developing our remaining hydroelectric potential, is a step in the right direction. Ontario is the heartland of Canada's successful \$6.7 billion a year nuclear industry and its 70,000 plus high value jobs.

Europe is successfully using agriculture and forest sourced biomass fuels to generate electricity, meet Kyoto targets, create thousands of jobs and enhance energy security.

Ontario's vast forestry and agricultural resources should be the basis for making investments in a carbon-neutral biomass energy industry. Converting the Nanticoke and

Lambton generating stations to use these, and other "Made in Ontario" renewable bio-fuels, means more, clean, secure energy on demand. Leveraging these renewable biomass resources means more high value innovation and jobs in Ontario.

Ontario should also be working with our auto sector to facilitate the transition to electric vehicles

as a way of reducing GHG emissions and our reliance on expensive imported gasoline. With transportation being Ontario's largest source of GHG emissions, investing in mass transit and electric vehicles is a more effective green plan than pretending windmills are the answer.

Growing our economy and improving our environment starts with leadership, vision and a

sound strategic plan that builds on Ontario's clean energy and technical strengths; creates supportive strategies for Canada's nuclear industry and auto sector; recycles valuable assets like the province's coal stations; and accelerates investments in Ontario's clean, reliable and affordable energy advantages.

**BIOMASS**

**HYDROELECTRIC**

**ELECTRIC VEHICLES**

**NUCLEAR**

## ONTARIO'S EXTRAORDINARY OPPORTUNITY TO LINK CLEAN ELECTRICITY TO TRANSPORTATION

Using Ontario's clean electricity advantages to power "Made-in-Ontario" emission-free electric vehicles is the best way to reduce greenhouse gas (GHG) emissions, sustain and create tens of thousands of high value jobs, and provide long-term energy security.

CANDU reactors that produce safe, reliable, affordable greenhouse gas emission-free electricity 24/7 align well with overnight, off-peak charging of electric vehicles.

Ontario's hydroelectric generation does as well!

Our forestry and agriculture sectors can provide renewable supplies of carbon-neutral biomass fuels to convert Ontario's coal generating stations.

Clean energy powered zero-emission vehicles and public transit can significantly reduce GHG emissions from Ontario's largest source, transportation.

Ontario hosts most of Canada's \$6.7 billion a year nuclear industry and its 70,000 jobs. Refurbishing our existing nuclear fleet and building new CANDU reactors sustains these jobs and creates tens of thousands more.

Additional jobs come with development of Ontario's biomass supply chain.

Building electric vehicles in Ontario would support and grow the existing 400,000 direct and indirect jobs in this province's auto sector.

It's time for smart, strategic investments that build on Ontario's energy strengths, create real economic and environmental benefits, and seize opportunities for innovation.

For more information please go to [www.abetterenergyplan.ca](http://www.abetterenergyplan.ca)

**From the people who help keep the lights on.**