

# North America HVAC News

## August 2011



International Market Strategy

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## 1 BRG Final Reports Available!

**1 August 2011**-- BRG has now published its final reports on the 2010 heating and cooling markets in many countries of the world. To order these reports please contact our building products division at [bpenquiries@brggroup.com](mailto:bpenquiries@brggroup.com). The following reports have been updated:

### **2011 North American Commercial Boiler Market Report**

Countries covered: USA & Canada. Boiler sales analyzed in the report include:

- Condensing Boilers sold in the USA (300,000 BTU to 12,600,000 BTU)
- Condensing Boilers sold in Canada (300,000 BTU to 12,600,000 BTU)
- Non-Condensing Boilers sold in the USA (300,000 BTU to 12,600,000 BTU)
- Non-Condensing Boilers sold in Canada (300,000 BTU to 12,600,000 BTU)

Each of these 4 market share tables is split by:

- Heat exchanger material: stainless steel, aluminum, primary copper (coated or with secondary HX), cast iron, steel watertube, steel firetube, copper
- Split by BTU: 300,000-499,999 BTU, 500,000-999,999 BTU, 1,000,000-2,499,999 BTU, 2,500,000-3,999,999 BTU, 4,000,000 to 7,999,999 BTU, 8,000,000 to 12,600,000 BTU
- Heating medium: hot water vs. low pressure steam vs. high pressure steam
- Type: premix vs. atmospheric vs. forced draft vs. other
- Fuel: gas vs. gas/oil (combination) vs. LPG/natural (combination) vs. oil
- Water vs. Space heating
- Wall hung vs. Floor standing

Other elements found in the commercial boiler report:

- Trends and forecasts (to 2015) in the commercial boiler market
- Market values and prices by BTU threshold
- Distribution flows for US and Canada (2010 and 2015), including end use segmentation

- Overview of the North American commercial water heating market
- Commercial boiler manufacturers profiles
- Overview of boiler inputs/outputs by manufacturer
- Info on the commercial buildings and boiler stock in each country.

Specific commercial boiler text (historical trends, 2010/2011 dvpts, forecasts, segmentation: heat exchanger material, output/input, burner type, fuel type etc., values, end use, market shares, distribution) is also included in the report.

### **2011 Boiler Market Reports**

Countries covered: USA, Canada, China, France, Germany, the UK, Italy, Spain, Belgium, the Netherlands, Austria, Sweden, Poland, Russia, Czech Republic, Turkey. Boiler types covered in the reports include: Wall-Hung Gas Condensing, Wall-Hung Gas Non-Condensing, Floor-Standing Gas Condensing, Floor-Standing Gas Non-Condensing, Oil Condensing, Oil Non-Condensing, Electric, Solid Fuel.

### **2011 Water Heater Market Reports**

Countries covered: USA, Canada, China, France, Germany, UK, Italy, Spain, Belgium, Netherlands, Austria, Sweden, Poland, Russia, Czech Republic, Turkey. Water heaters covered in North America include: Tankless Gas Condensing, Tankless Gas Non-Condensing, Tank/Storage Residential Gas Condensing, Tank/Storage Residential Gas Non-Condensing, Tank/Storage Commercial Gas Condensing, Tank/Storage Commercial Gas Non-Condensing, Tankless Electric, Tank/Storage Residential Electric, Tank/Storage Commercial Electric, Oil, Indirect Cylinders Separate, Solar Storage Tanks, Hybrid Water Heaters, Heat Pump Water Heaters.

### **2011 Solar Thermal Market Reports**

Countries covered: USA, France, Germany, the UK, Italy, Spain, Belgium, Netherlands, Austria, Sweden, Poland, Russia, Czech Republic, Turkey. Products covered in the reports include: Flat Plate Collectors, Vacuum Collectors, Unglazed Collectors, Solar Storage Tanks.

### **2011 Heat Pump Market Reports**

Countries covered: USA, Canada, France, Germany, UK, Italy, Spain, Belgium, Netherlands, Austria, Sweden, Poland, Russia, Czech Republic, Turkey. Products covered in the reports include: Ground Source, Exhaust Air-Water, Outside Air-Water, Heat Pump Water Heaters, Air-to-Air Heat Pumps (where relevant).

## **2011 Furnace Market Reports**

Countries covered: USA, Canada. Products covered in the reports include: Gas Condensing Furnaces, Gas Non Condensing Furnaces, Electric Furnaces, Oil Furnaces.

## **2011 Air Conditioner Market Reports**

Countries covered: USA, Canada. Air conditioner types covered in the reports include: Condensing Units, Air Handlers, Air-Air Heat Pumps, Residential Package Units, PTACs, Mini-Splits, Window/Wall Units, Portable Air Conditioners, VRFs.

## **2011 Radiator Market Reports**

Countries covered: China, France, Germany, UK, Italy, Spain, Belgium, Netherlands, Austria, Sweden, Poland, Russia, Czech Republic, Turkey. Radiator types covered in the reports include: Steel Panel, Towel Warmers, Aluminium, Cast Iron, Decorative, Other Steel, Fixed Electric Heat Emitters.

## **2011 Biomass Boiler Market Reports**

Countries covered: USA, Canada, France, Germany, UK, Italy, Spain, Belgium, Netherlands, Austria, Sweden, Poland, Russia, Czech Republic, Turkey. Boilers covered in the reports include: Fossil Fuel/Universal, Logwood/Bifuel, Pellet, Woodchip, Other.

To obtain these product summaries and forecasts, a table of contents, or for more details about the report contents or our new database, please contact us at [bpenquiries@brggroup.com](mailto:bpenquiries@brggroup.com)

New this year!!! We are currently researching the boiler, water heater and solar thermal markets in the following regions/countries:

### **The Middle East:**

- Saudi Arabia, UAE, Bahrain, Oman, Qatar, Kuwait

### **Other Countries in the Americas**

- Mexico, Brazil, Argentina, Chile, Colombia.

To receive more information about the products covered in the Middle Eastern and South American (or other country) reports, the publication dates on these, or for further questions, please contact us at [bpenquiries@brggroup.com](mailto:bpenquiries@brggroup.com).

**Source:** BRG Building Solutions

**19 July 2011:** AO SMITH CORPORATION today announced it has signed a definitive agreement to acquire LOCHINVAR CORPORATION of Lebanon, Tenn., for \$418 million and will not assume LOCHINVAR's existing debt.

Privately held LOCHINVAR is a leading manufacturer of high-efficiency boilers used in commercial and residential hydronic heating and hot water applications.

AO SMITH expects the acquisition to be accretive to earnings per share in the amount of approximately \$.10 in the fourth quarter of 2011, excluding one-time purchase accounting charges and professional fees related to the acquisition, and in the range of \$.40 to \$.50 per share in 2012. The transaction is expected to close in the third quarter of 2011, subject to customary closing conditions and regulatory review.

"This acquisition fits squarely within our stated strategy to expand our core product offering with new technologies, which emphasize high-efficiency products that can be applied globally," Paul W. Jones, chairman and chief executive officer, observed. "This is a significant first step in growing our diversified global water heating platform and the beginning of the redeployment of the proceeds from the sale of our Electrical Products Company." For the 12 months ended June 30, 2011, LOCHINVAR recorded sales of approximately \$200 million and adjusted EBITDA of approximately \$45 million. The purchase price represents an adjusted multiple of 7.5 times EBITDA when taking into account the estimated \$80 million of tax benefits that AO SMITH will receive as a result of treating the transaction as a purchase of assets for tax purposes. In addition to the fixed purchase price, privately held LOCHINVAR's shareholders could earn up to an additional \$35 million if certain revenue objectives are achieved by November 2012. AO SMITH expects to achieve approximately \$10 to \$15 million of annual synergies over the next few years from purchasing economies and potential global expansion opportunities.

"The addition of LOCHINVAR expands our product offering and gives us access to proven high-efficiency boiler technology," Ajita G. Rajendra, president of A. O. SMITH WATER PRODUCTS COMPANY, said. "The \$1.1 billion North American boiler industry is in the midst of a transition to the new high-efficiency condensing technology, which we believe is growing several times faster than GDP," he continued. "We expect high-efficiency boiler products to continue to grow at an accelerated rate for the foreseeable future." "We also believe there are significant growth opportunities in regions outside of North America, especially in China, for LOCHINVAR's higher-efficiency boilers, as more commercial customers seek ways to save energy and reduce operating costs," Rajendra pointed out. "This opportunity becomes even more compelling when we couple LOCHINVAR's leading technology with AO SMITH's many years of experience, strong water heater manufacturing platform and prominent brand in China." "LOCHINVAR represents an excellent fit because of their complementary products and

commitment to product engineering and technology leadership," Rajendra observed. "And, they share our commitment to the highest levels of product quality and customer satisfaction. The LOCHINVAR plant and technical facility in Lebanon, Tenn., are best-in-class operations, and we are excited about the future for this campus. LOCHINVAR has built a strong team internally and a strong group of sales representatives. We are enthused about their becoming part of the AO SMITH team." William L. Vallett, Jr., chief executive officer and president of LOCHINVAR, commented, "We are extremely excited about the potential benefits of combining with such a logical partner like AO SMITH and the future prospects for our employees, customers and suppliers." Highlights of the transaction: Access to higher growth, energy efficient technology and product line expansion: Pro forma AO SMITH sales in 2010 increase 12 percent to approximately \$1.7 billion, based on LOCHINVAR's sales of approximately \$180 million. LOCHINVAR's sales have grown at a rate of eight percent for the last five years, and A. O. SMITH's management believes that this growth rate will continue for the foreseeable future. In the last year, approximately two-thirds of LOCHINVAR's residential and commercial boiler revenues have come from its well known lines of high-efficiency, condensing products. In addition, the North American commercial boiler industry is currently split between hydronic heating applications and hot water applications, and AO SMITH currently sells very few hydronic heating systems. Given its leading technology position and presence in this segment, LOCHINVAR will serve as the foundation for AO SMITH's global residential and commercial boiler platform.

Value creation and synergy opportunities: AO SMITH expects annual synergies from purchasing economies and potential global expansion opportunities to be \$10 to \$15 million in the next few years.

Financing and financial targets: Management expects to fund the \$418 million purchase price with a combination of cash and debt, which it expects to borrow under its \$425 million revolving credit facility. AO SMITH believes the transaction will achieve management's financial targets by delivering full-year earnings accretion of \$.40 to \$.50 per share in 2012 and a return in excess of the company's cost of capital in the first year after completing the acquisition.

LOCHINVAR's product offerings are highly complementary to AO SMITH's and include: residential and commercial high-efficiency condensing and non-condensing boilers, residential and commercial water heaters, indirect water heaters, storage tanks, solar thermal commercial water heaters, and commercial and residential pool and spa heaters.

LOCHINVAR's manufacturing and product engineering operations are located in Tennessee. The purchase also includes LOCHINVAR LTD., the company's United Kingdom-based subsidiary.

AO SMITH CORPORATION, with 2010 sales of nearly \$1.5 billion, is one of the world's leading manufacturers of residential and commercial water heating equipment, offering a comprehensive line featuring the best-known brands in North America and China, as well as water purification products for residential and light

commercial applications. AO SMITH, headquartered in Milwaukee, Wis., employs approximately 10,000 people at operations in the U. S., Canada, Mexico, India, China, and the Netherlands.

**Source:**AO SMITH CORPORATION

### 3 ecoENERGY Retrofit - Homes Grants Renewed

**13 July 2011:**The Government of Canada has renewed the popular ecoENERGY Retrofit –Homes program. From June 6, 2011, until March 31, 2012, homeowners are eligible to receive grants of up to \$5,000 to make their homes more energy-efficient. Homeowners who participated in the program to date have saved 20 percent on their energy bills.

There are two important changes to the program. First, there is a requirement for participants to register directly with the program before booking their evaluation. Second, homeowners will now be required to provide receipts to their energy advisor at the time of the post-retrofit evaluation to confirm eligibility for the grant.

How to apply

The first step in the renewed ecoENERGY Retrofit –Homes program is to register:

- New participants-** if you or a previous owner did not obtain an energy evaluation of your property since April 2007.
- Past participants-** Homeowners who participated in the program before April 1, 2011, and who did not receive the maximum amount of \$5,000 can submit another application for improvements purchased and installed after June 6, 2011.

If you plan to apply for multiple properties, a form must be completed for each one.

Only products purchased after June 6, 2011, and installed after a pre-retrofit evaluation are eligible for an ecoENERGY grant. All energy retrofits and post-retrofit evaluations must be completed by March 31, 2012. The homeowner must also sign the grant application by this date.

**Source:**[www.ecoaction.gc.ca](http://www.ecoaction.gc.ca)

### 4 Initiative Recognizes Most Energy-Efficient Prdcts

**20 July 2011:**DOE and the U.S. Environmental Protection Agency (EPA) announced on July 14 the first ENERGY STAR products recognized as the most energy-efficient in their categories. The announcement covers four categories: clothes washers, televisions, heating and cooling equipment, and refrigerator-freezers; although the "Most Efficient" lists are currently only available for clothes washers, televisions, central air conditioners, and air-source heat pumps. The new

designation of "Most Efficient," representing approximately the top 5% of the models on the market, aims to provide manufacturers with an incentive for greater product energy efficiency while providing consumers new information about the products that comprise the top tier in each category. The pilot program is part of ENERGY STAR's overall commitment to protect people's health and the environment by encouraging energy efficiency.

The "Most Efficient" lists include products by CROSELY, ELECTROLUX, FRIGIDAIRE, LG, PANASONIC, RHEEM, and SAMSUNG, as well as SEARS' KENMORE brand and BEST BUY's INSIGNIA brand. Later this year, the EPA will initiate a process to consider additional product categories for inclusion in 2012. Consumers can find cited products on the ENERGY STAR website and in stores by looking for the "Most Efficient" designation. In addition to meeting established performance requirements, products must also be ENERGY STAR qualified and certified by an EPA-recognized certification body. ENERGY STAR is a joint program of the EPA and DOE.

**Source:**EERE Network News

## 5 US Firms Top New Renewable Energy Use Survey

**13 July 2011:**Three U.S. firms are among the world's leading corporate buyers of renewable energy, according to survey released on June 28 by Bloomberg New Energy Finance. WHOLE FOODS MARKET, INTEL CORPORATION, and KOHL'S DEPARTMENT STORES were cited in results that were part of the new Corporate Renewable Energy Index. Commissioned by Vestas Wind Systems, the index is designed to offer information about the types of energy used by major corporations.

Among the almost 1,000 companies surveyed, more than 100 responded with 2010 total energy consumption figures as well as data about renewable energy as a share of total energy consumption. The index also includes how corporations procure renewable energy, such as through renewable energy certificates. The renewable energy technologies included geothermal, solar, wind, hydro, and waste energy.

Chip-maker INTEL procured 1,493 gigawatt hours of renewable energy in 2010. KOHL'S ranked highest in terms of renewable procurement on a percentage basis, with 100.4% of its electricity coming from renewable energy, including extra purchases of renewable energy credits. Natural foods retailer WHOLE FOODS MARKET was tops in wind-specific energy, with all of its electricity coming from this source.

**Source:**EERE Network News

## 6 Boiler Rules Moved to Back Burner

**3 July 2011:** WASHINGTON - To proponents of new federal regulations limiting emissions from industrial boilers like those used by Maine paper mills, letting the Environmental Protection Agency complete its work as quickly as possible is a matter of life and death.

At stake in reducing the toxins emitted by boilers is preventing 6,500 premature deaths a year and other health problems, proponents say, and it would be a mistake to delay the final standards from being issued in April 2012.

Industrial boilers use fuels such as biomass and oil to produce heat and steam to generate power at manufacturing plants and places such as universities and hospitals. Emissions from such boilers are the second-biggest source, behind power plants, of harmful toxins such as mercury and lead.

John Walke, clean air director of the Washington-based Natural Resources Defense Council, said, "I can't fathom why the citizens of Maine, or any other state for that matter, would want to block the standards to reduce mercury or other carcinogens when the health benefits are so close (to occurring)."

But to critics of the regulations, delaying the EPA rules and giving companies more time to comply with when they take effect is a matter of economic life and death, with tens of thousands of jobs on the line.

Those who want to stay the EPA's hand say they don't argue with cleaning up boiler emissions; they simply want what they regard as more realistic standards.

The EPA said the original rules it came out with last year would have cost \$10 billion for industries nationwide to retrofit boilers with air cleaning equipment. The agency revised the regulations earlier this year and said it had cut that cost in half. But industry advocates say the cost really was \$20 billion originally and now would be \$14 billion.

The EPA seemed to acknowledge industry's concerns in December, when it asked a federal court to allow it to work on the rules for an additional 15 months, until April 2012. That request was denied, and the EPA was ordered to complete the final regulations by late February.

In February, the EPA came out with the revised rules.

But with pressure from industry and some lawmakers, the agency said in May that it would continue to seek public comments before putting the rules in effect. Late last month, the EPA said it wouldn't come out with updated rules until Oct. 31, would accept more public comments and would issue final rules by April 30.

That didn't satisfy critics.

"Congress needs to say, 'Hold on, before you have to install \$14 billion in (pollution) controls, make sure you have the rules right,'" said Lisa Jaeger, counsel

to the Council of Industrial Boiler Owners.

Three Maine lawmakers agree with Jaeger and other critics of the current boiler regulations.

Democratic Rep. Mike Michaud of the 2nd District and GOP Sens. Susan Collins and Olympia Snowe are calling on the EPA to slow down yet again and -- just as important to critics -- rework the boiler rules yet again. The Maine lawmakers are among those who say it might be necessary for Congress to mandate that through legislation.

The sole Maine lawmaker who wants the EPA to proceed without more delay is Democratic Rep. Chellie Pingree of the 1st District.

Pingree said the EPA has considered some of the concerns laid out by her and 113 other lawmakers last summer in a letter to the agency and made changes to the regulations that make them more practical to put into effect.

For instance, the EPA "agreed not to lump biomass boilers here in Maine into the same category as coal-fired boilers in other parts of the country," Pingree said.

"These are important rules that will protect us from toxins like mercury and lead in the air and are necessary for public health," Pingree said. "I do think the government should help support the development of new technology to help reduce air pollution so the burden on industry isn't too great, but I don't think delaying implementation of the rules is the right solution."

Michaud has signed on to a bipartisan House bill to require the EPA to re-examine the rules and work on them for another 15 months. It also would give companies five years to bring boiler emissions into compliance with the new regulations, rather than the existing three-year window.

"We need to take responsible actions to protect public health and our environment," Michaud said. "But we need to do so in a reasonable way that does not jeopardize our efforts to create jobs and get the economy back on track."

Collins is working with a bipartisan group of senators to craft similar legislation.

"The manufacturing sector in our country is still struggling and the last thing we should be doing is imposing very costly new regulations when we can improve the quality of our air without imposing such onerous and costly rules," Collins said.

Snowe said she will need to study the Senate bill that Collins and the other senators propose. But she agreed that legislation "may well be needed."

The uncertain and halting path of the EPA's work on the boiler rules shows an "irrationality" that may require Congress to step in, Snowe said.

The American Forest and Paper Association argues that the rules issued by the EPA in February would burden the industry with at least \$5 billion in capital equipment costs and billions more in operating costs and cause, nationwide, "tens of thousands of job losses in the forest product sector alone."

In Maine, Keith Van Scotter, CEO of Lincoln Paper and Tissue, said he is concerned that the EPA rules as they stand could set up his company to fail. His main concern is that the new rules would bar him from using a backup boiler that runs on oil. He needs the backup boiler just a few days a year, when one of his two main boilers, which run on biomass fuel, is out of commission.

That backup boiler's impact on the environment is not even detectable, and the cost of replacing it is unaffordable for a 400-employee company with slim profit margins, he said.

"One of the reasons our entire industry has asked the EPA to re-look at these things is really to try to get the regulations to the point where a properly run boiler in a real world situation, with the right control equipment, can achieve the regulations," Van Scotter said. "The EPA has made some steps in the right direction but they need to do more."

Boston-based Sappi Fine Paper North America, which employs nearly 1,200 Mainers at mills in Skowhegan and Westbrook, says it has similar concerns. Its president and CEO, Mark Gardner, who met recently with Collins and Snowe, said the proposed regulations would force Sappi to spend millions of dollars to retrofit the boilers in Skowhegan. He said the mill already is "highly energy efficient" because its use of mostly renewable fuels means a "very low carbon footprint."

Gardner said the regulations could jeopardize jobs while the proposed legislation "would allow the EPA more time to set realistic standards."

Frank O'Donnell, president of the Washington-based Clean Air Watch, said a "sophisticated and aggressive lobbying campaign" against the boiler rules by industry groups is distorting the issue and persuading the Obama administration and the EPA to try to slow them down.

The rules should have gone forward this year, as the federal court ordered, O'Donnell said.

"The EPA has identified very significant health benefits from the cleanup" of industrial boilers that also carry major economic benefits: "Thousands of premature deaths avoided, asthma attacks avoided, workers not having to call in sick," O'Donnell said.

But now it is "clear (the Obama administration) is in full retreat and trying to appease members of Congress chomping at the bit to stop this."

**Source:**[www.pressherald.com](http://www.pressherald.com)

## 7 Where to Build in NYC? Team New York Looks Up

**27 July 2011**-- New York City's famously dense urban landscape presents a challenge to developers hunting for a bit of unoccupied space to build on. Team New York believes it's identified the most underutilized real estate in the entire city -- flat rooftops, where space and access to sunlight are plentiful.

More specifically, the Solar Decathlon team, composed of architecture and engineering students from The City College of New York, has designed a house for rooftops of mid-rise buildings -- both residential and commercial. The students envision their house, dubbed the Solar Roofpod, as a prototype that can be replicated in densely populated areas around the country.

A Solar Trellis -- equipped with both a solar array and solar thermal collectors that will distribute the sun's heat through a radiant floor system -- acts as the primary power source for the house.

For quick assembly, the building envelope is constructed of 64 heavily insulated building blocks, mass-produced in prefabrication facilities. The prefabricated assembly helps keep costs down and allows for easy transportation -- via a building roof, staircase, or elevator. Additional elements such as occupancy sensors, energy-efficient lighting, and an energy-efficient HVAC system reduce overall energy consumption.

Students envision two future scenarios for their prototype house post-competition -- either as a visitor center and classroom for sustainability education or as part of the school's planned environmental science center on Pier 26 in Tribeca along the Hudson River.

The Solar Decathlon competition will take place at the National Mall's West Potomac Park in Washington, D.C., Sept. 23 - Oct. 2, 2011. Open to the public free of charge, visitors can tour the houses, gather ideas to use in their own homes, and learn how energy-saving features can help them save money today.

**Source:**[www.blog.energy.gov](http://www.blog.energy.gov)

## 8 DOE & Ad Council Launch Consumer Education Campaign

**19 July 2011**-- Washington, D.C. - U.S. Department of Energy (DOE) and the Ad Council today launched a national consumer education campaign to help consumers save money on utility bills. Created pro bono by Texas-based advertising agency GSD&M, the public service advertisements (PSAs), aim to help consumers save money on their energy bills by doing things such as sealing leaks in their homes and using energy efficient products.

"Americans spend about \$2,000 per household on energy every year - but many of them could save a few hundred of that without changing their lifestyle," said Energy Secretary Steven Chu. "Many American families can take simple steps to reduce their energy bill, while making their homes more comfortable, and use that money for something they really need or want."

The PSAs direct homeowners to [energysavers.gov](http://energysavers.gov), where they can find tools and information to help them make their homes more efficient. Energy-saving tips on the website include:

- Saving more than \$100 a year on heating and cooling bills by using a programmable thermostat to make sure you are only conditioning your home when you need to be;
- Upgrading 15 of the traditional light bulbs in your home, which could save you about \$50 per year; and
- Using Energy Star qualified appliances to save even more.

"We are thrilled to continue our partnership with DOE on this vital energy efficiency campaign," said Peggy Conlon, president and CEO of the Ad Council. "These PSAs will demonstrate to homeowners nationwide the variety of energy efficient alternatives that can provide sustainable savings over time."

"We have a long history with, and are committed to supporting, the Ad Council on public issues affecting our nation," said Duff Stewart, president and CEO of GSD&M. "That's why we are honored to partner with the U.S. Department of Energy on the topic of energy efficiency and to help communicate easy ways to save money at home."

Following the Ad Council's model, the announcements will be distributed to media outlets nationwide and will run and air in advertising time and space that is donated by the media.

To see tips and the ads prepared as part of the campaign, visit [EnergySavers.gov](http://EnergySavers.gov)

**Source:**[www.energy.gov](http://www.energy.gov)

## 9 Keepin' It Cool: How the A/C Made Modern America

**14 July 2011** -- Air conditioning hasn't just cooled our rooms -- it's changed where we live, what our houses look like, and what we do on a hot summer night.

Hot damn. In a week that's seen temperatures around the country reach into and above the 90s, staying inside has seemed like the natural thing to do. But of course, the chilly indoor summer climate is anything but natural, an artificial oasis

of cool brought to you by your friend, the air conditioner.

We often think of air conditioners as just that, a machine that conditions (i.e., cools) the air around us. But the effects of air conditioners reach far beyond atmospheric to the ways we build our houses, where in the country we live, and how we spend our time. Air conditioners are the enablers of modern American life.

Before air conditioning, in a bygone and surely less comfortable era, people employed all sorts of strategies for keeping cool in the heat. Houses were designed with airflow in mind -- more windows, higher ceilings. A style once prevalent in the American south, the dogtrot house, was really two smaller cabins -- one for cooking and the other for living -- connected under one roof with an open-air corridor between them. In addition, many homes had porches where families could spend a hot day, and also sleeping porches with beds where they could ride out a hot night. Many home designs took passive solar design principles into account, even if they didn't name them as such.

Besides housing design, people had other tricks: taking naps during the heat of the day, carrying hand-held fans around, and, of course, swimming. My grandmother told me she used to pay a bus fare and sit on the open, upper deck for hours, riding all around the city.

The first machine resembling a modern air conditioner was built in 1902 by an inventor named Willis Carrier in an attempt to prevent paper from wrinkling in the heat and humidity at the Sackett-Wilhelms Lithographing and Publishing Company in Brooklyn. Soon, industrial buildings and hospitals began adopting the technology. The first person to air condition his private home was Charles Gates, son of industrialist and profligate gambler John Gates, who set up a cumbersome system at his house in Minneapolis in 1914. (Minneapolis seems like an odd place for the first home air conditioner, but, hey, if you've got the cash, who's to stop you?)

In the 1920s, innovations made air conditioning units smaller and safer (older versions had used a toxic coolant). During the Depression, few places could afford to install the systems, but one venue saw returns on such an investment: movie theaters. The air conditioning in theaters became an attraction in itself, and people flocked to them. Not coincidentally, what many consider Hollywood's Golden Age began around the same time.

It was during the postwar period that air conditioning arrived en masse in American homes, with more than one million units sold in 1953. The machines were heavily promoted by two key industries. Air conditioning served the needs of homebuilders eager to build huge numbers of cheap houses and utilities were only too happy to keep ramping up electricity sales to the burgeoning suburbs. AC for cars became a status symbol, too, so much so that some people without it supposedly drove around with their windows up in 100 degree heat to give an impression otherwise. The suburban American dream was built on the sweat of air conditioners.

Many of the central changes in our society since World War II would not have been possible were air conditioning not keeping our homes and workplaces cool. Florida, Southern California, Texas, Arizona, Georgia, and New Mexico all experienced above-average growth during the latter half of the 20th century -- hard to imagine without air conditioning. In fact, the Sunbelt's share of the nation's populations exploded from 28 percent in 1950 to 40 percent in 2000. And hubs of business and technology in hot regions of the globe, such as Dubai, may never have taken off.

Computers throw off a lot of heat, too. The development of the entire IT industry might not have happened without cooling technologies first pioneered by air conditioning.

The advent of air conditioning has shaped our homes and family life as well. Houses are designed not for ventilation but for central cooling systems. Porches, where they exist, are relics of another age, and few new homes include them. Families gather inside, in the comfort of 72-degree living rooms, to watch TV. Would television have even gained its central place in American family life, were the rooms from which we watch it not so enjoyably cool?

As Americans think about reducing their energy consumption, many are considering keeping their air conditioners off. But air conditioners haven't merely chilled the air around us -- they've reshaped our infrastructure, our entertainment, and our habits.

So, go right ahead and turn off your AC but there's no switch to roll back the systems it's propelled.

**Source:** [www.theatlantic.com](http://www.theatlantic.com)