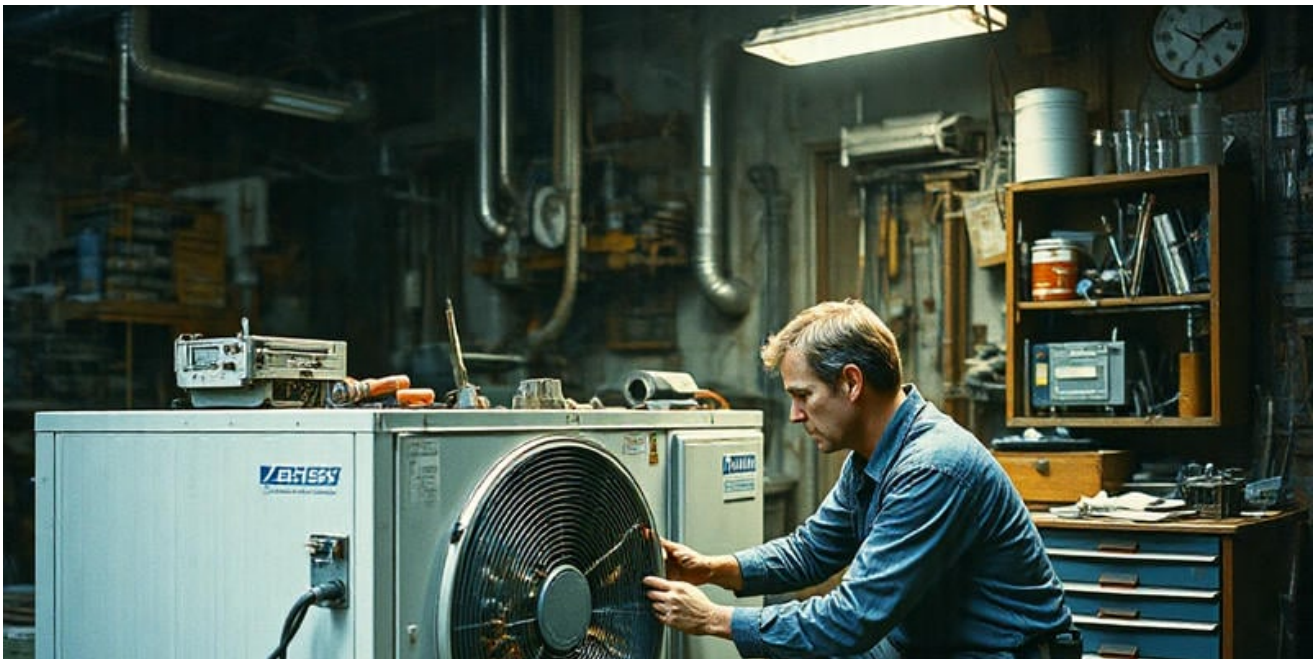
Retrofit HVAC

- **Reviewing Key Safety Measures for Mobile Home HVAC Work**
  Reviewing Key Safety Measures for Mobile Home HVAC Work Understanding PPE Guidelines for Mobile Home Furnace Repair Following OSHA Standards During Mobile Home AC Installations Noting Electrical Hazard Precautions in Mobile Home HVAC Projects Planning Lockout Procedures for Mobile Home Heating Maintenance Checking for Proper Ventilation in Mobile Home HVAC Crawl Spaces Confirming Compliance with HUD Requirements for Mobile Home Ducts Conducting On Site Safety Assessments Before Mobile Home AC Repairs Checking Gas Line Integrity in Mobile Home Heating Systems Identifying Combustion Clearance Issues in Mobile Home Furnaces Monitoring Air Quality Factors During Mobile Home HVAC Upkeep Coordinating Exit Strategies for Emergencies in Mobile Home HVAC Work
- **Identifying Warning Signs of Outdated Components**
  Identifying Warning Signs of Outdated Components Converting Older Units to High Efficiency Models Examining Duct Layout for Better Distribution Adjusting Equipment Size to Fit Modern Needs Evaluating Newer Options to Replace Electric Heaters Implementing Airflow Balancing Techniques Overcoming Physical Constraints in Legacy Structures Transitioning to Improved Refrigerants for Compliance Strengthening Insulation to Enhance Performance Matching Compatibility of Controls and Existing Wiring Coordinating Expert Consultations for Complex Projects Planning Timelines for Effective System Upgrades
- **About Us**



In recent years, as the conversation around energy efficiency and environmental sustainability has gained momentum, many homeowners and businesses are re-evaluating their existing HVAC systems. The benefits of upgrading older units to high-efficiency models extend beyond mere cost savings on utility bills; they encompass enhanced comfort, improved air quality, and a reduced carbon footprint.

One of the most compelling reasons to upgrade to a high-efficiency HVAC model is the potential for significant energy savings. Traditional systems often operate at lower efficiency levels, meaning they consume more energy for the same amount of heating or cooling output compared to modern units. High-efficiency models are designed with advanced technology that allows them to use less energy while providing optimal climate control. This translates into noticeable reductions in monthly electricity bills, offering long-term financial benefits that can offset the initial investment in new equipment.

Moreover, high-efficiency HVAC systems contribute significantly to improved indoor comfort. Mobile home HVAC systems must comply with local building codes **hvac system for mobile home** compressor. These modern units are equipped with variable-speed motors and precise temperature controls that maintain consistent temperatures throughout a space without frequent cycling on and off. This not only enhances comfort by eliminating hot or cold spots but also reduces noise levels-an important consideration for both residential spaces seeking tranquility and commercial environments where concentration is key.

Another advantage of updating to a high-efficiency model is its impact on indoor air quality. Many new systems come with advanced filtration features that help remove dust, pollen, and other allergens from the air. This is particularly beneficial for individuals with respiratory issues or allergies, as cleaner air can reduce symptoms and enhance overall well-being.

Beyond personal and financial gains, converting older HVAC units to high-efficiency models plays an essential role in promoting environmental sustainability. Energy-efficient systems require less power consumption from fossil fuels-a leading source of greenhouse gas emissions-thus helping mitigate climate change impacts. By reducing their carbon footprint through such upgrades, homeowners and businesses alike contribute positively toward global efforts aimed at preserving our planet.

Furthermore, governments worldwide often incentivize upgrades to energy-efficient appliances through tax credits or rebates due to their positive environmental impact. Taking

advantage of these incentives can further alleviate the costs associated with purchasing new equipment.

In conclusion, transitioning from outdated HVAC units to high-efficiency models presents numerous advantages: considerable cost savings over time; enhanced indoor comfort and air quality; as well as contributing towards environmental conservation efforts globally-all valuable reasons encouraging this worthwhile investment today for greater returns tomorrow!

Common Hazards Associated with Mobile Home HVAC Systems —

Assessing the current HVAC system in older mobile homes is a crucial step when considering converting these units to high-efficiency models. Mobile homes, particularly those built several decades ago, often have outdated and inefficient heating, ventilation, and air conditioning (HVAC) systems. These older systems can lead to increased energy consumption, higher utility bills, and less comfort for residents.

Firstly, assessing the existing HVAC system involves a thorough examination of its components. This includes checking the furnace, air conditioner, ductwork, and thermostat. Older furnaces and air conditioners are typically less efficient than modern models due to advancements in technology and stricter energy efficiency standards introduced over the years. It's common to find that these systems operate at an efficiency level far below what is considered acceptable today.

The ductwork also plays a critical role in this assessment. In many older mobile homes, duct systems may have leaks or poor insulation that lead to significant energy loss. An inspection should include checking for gaps or damage in the ducts and ensuring they are properly sealed and insulated.

Another important aspect is evaluating the insulation of the mobile home itself. Older units often lack adequate insulation which can exacerbate inefficiencies in climate control. Improving insulation can drastically reduce energy use by helping maintain consistent indoor temperatures with minimal strain on the HVAC system.

Converting an old HVAC system to a high-efficiency model requires careful planning and consideration of various factors including costs, available space for new equipment, and potential modifications needed for integration with existing structures. It's essential to choose models that fit well within the spatial constraints typical of mobile homes while providing sufficient capacity to efficiently heat or cool the living space.

High-efficiency HVAC systems not only provide improved performance but also offer long-term savings on utility bills due to their reduced energy consumption. Moreover, they contribute positively towards environmental sustainability by decreasing carbon emissions associated with heating and cooling activities.

In conclusion, assessing an older mobile home's current HVAC system is an indispensable first step when planning an upgrade to high-efficiency models. By thoroughly evaluating all aspects of the existing setup-from individual component performance to overall home insulation-residents can make informed decisions that enhance comfort while optimizing energy use and reducing costs over time. The transition not only promises economic benefits but also aligns with broader goals of environmental responsibility through more sustainable housing solutions.

Posted by on

Essential Safety Gear and Equipment for Technicians

In today's rapidly evolving world, where energy efficiency and sustainability are paramount, modern high-efficiency HVAC (Heating, Ventilation, and Air Conditioning) units stand out as a beacon of innovation. Converting older HVAC models to these contemporary counterparts not only enhances environmental stewardship but also promises significant cost savings and comfort improvements for homeowners and businesses alike.

One of the most striking features of modern high-efficiency HVAC units is their superior energy performance. These systems are designed with advanced technologies that optimize energy usage. For instance, variable speed compressors and fans adjust their operation based on the current cooling or heating demand rather than running at full capacity continuously. This adaptability reduces energy consumption significantly and results in lower utility bills over time.

Another key feature is improved temperature control. Modern units often integrate smart thermostats that allow for precise temperature adjustments and can be controlled remotely via smartphones or other devices. This technology ensures that the indoor climate remains consistently comfortable while minimizing unnecessary energy expenditure when spaces are unoccupied.

Heat exchangers in high-efficiency models have also seen advancements, allowing them to extract more heat from less fuel compared to older units. Enhanced blower motor designs contribute to quieter operation-a welcome change from the often noisy predecessors-making

living and working environments more pleasant without compromising performance.

Moreover, these modern systems commonly utilize environmentally friendly refrigerants with low global warming potential (GWP), addressing concerns about emissions that contribute to climate change. This shift not only aligns with regulations aimed at reducing carbon footprints but also reflects a commitment to sustainable practices.

When considering converting older HVAC units to high-efficiency models, it's important to recognize the long-term financial benefits despite the initial investment costs. State-of-the-art systems often come with rebates or incentives offered by governmental bodies aiming to encourage eco-friendly upgrades. Over time, the savings on energy bills can offset installation expenses while simultaneously increasing property value.

In summary, transitioning to modern high-efficiency HVAC units represents a forward-thinking approach that marries technology with environmental consciousness. The compelling features such as enhanced energy efficiency, improved temperature regulation, quieter operation, and eco-friendly refrigerants make these systems an attractive option for anyone looking to upgrade their existing HVAC setup. Embracing this change not only contributes positively to our planet's health but also ensures more comfortable living conditions coupled with economic benefits-a win-win scenario for all stakeholders involved.

Proper Procedures for Handling Refrigerants and Chemicals

The transition from older units to high efficiency models represents a critical intersection between environmental sustainability and economic viability. As the world grapples with climate change and resource scarcity, the need for efficient energy consumption becomes ever more pressing. Converting older units, whether they are appliances, vehicles, or industrial machinery, into high efficiency models offers a promising solution that addresses both ecological concerns and economic incentives.

From an environmental perspective, high efficiency models present numerous benefits. They typically consume less energy and produce fewer emissions compared to their older counterparts. For instance, upgrading an old furnace or air conditioning unit to a modern high-efficiency model can significantly reduce greenhouse gas emissions. This reduction in emissions is crucial in mitigating the effects of global warming. Furthermore, high efficiency models often incorporate advanced technology that minimizes waste and promotes sustainable resource use.

In addition to reducing emissions, these conversions help conserve natural resources by utilizing energy more effectively. Traditional units often suffer from inefficiencies that lead to excessive fuel consumption or electricity usage. By upgrading to more efficient systems, we can decrease our reliance on finite resources such as fossil fuels, promoting a more sustainable interaction with our environment.

Economically, the shift towards high efficiency models also presents compelling advantages. Although the initial investment required for conversion might be substantial, the long-term savings are significant. High efficiency units tend to lower utility bills due to their reduced energy consumption. Over time, these savings can offset the upfront costs associated with purchasing new equipment or retrofitting existing systems.

Moreover, as governments around the world recognize the importance of energy efficiency in combating climate change, many have introduced incentives such as tax credits and rebates for individuals and businesses making these upgrades. These financial incentives not only make it more affordable to convert but also stimulate economic activity by encouraging spending on new technologies.

Additionally, converting older units could potentially enhance property values. Buildings equipped with up-to-date energy-efficient systems are increasingly attractive in real estate markets where buyers prioritize sustainability and cost-effectiveness in their purchasing decisions.

However, despite these advantages, there are challenges associated with converting older units to high efficiency models that must be acknowledged. The upfront cost remains a barrier for some consumers and businesses who may not have immediate access to capital needed for investments in newer technologies. Furthermore, there is often a learning curve involved in operating new systems efficiently which can temporarily offset some of their anticipated benefits.

To address these challenges effectively requires coordinated efforts among policymakers, industry leaders, and consumers alike; ensuring that information about potential savings is disseminated widely while facilitating access through financial support programs where necessary.

In conclusion, transitioning from older units to high-efficiency models offers substantial environmental benefits by reducing emissions and conserving resources while simultaneously providing economic gains through lower operational costs and increased property values over time despite initial expenses incurred during conversion processes being formidable obstacles yet surmountable given appropriate policy measures supporting widespread adoption across sectors globally thereby creating dual impact beneficially affecting both ecology economy collectively society at large fostering sustainable future harmonious development planet its inhabitants thriving together symbiotically interconnected manner indefinitely perpetually onward progressing collaboratively advancing exponentially synergistically forward-looking vision realization pragmatically achievable attainable objective goals set forth concerted unified approach strategic implementation comprehensive well-coordinated execution plan action-oriented systematically detail-oriented focus dynamically adaptable flexible responsive changing conditions evolving circumstances continually iteratively improving refining optimizing methodologies techniques practices adapted suited contextually relevant applicable specific situations scenarios encountered prevailing environments encountered varied diverse locales regions worldwide universally encompassing all-encompassing holistic inclusive approach consideration taken account addressing needs priorities stakeholders involved concerned parties affected engaged involved actively participating process contributing positively constructive manner fostering

Electrical Safety Protocols for Mobile Home HVAC Work

Converting older units to high-efficiency models is an essential step toward sustainability and energy conservation. This process not only reduces operational costs but also significantly decreases the environmental impact of outdated systems. The transition may seem daunting at first, but with a clear, step-by-step guide, it becomes manageable and rewarding.

The first step in this transformation journey involves a thorough assessment of your existing units. Evaluate their current performance levels, energy consumption, and maintenance costs. This analysis helps identify which units are due for an upgrade and provides a baseline for measuring improvements after conversion.

Once you've identified the units that require upgrading, the next step is research. Investigate the latest high-efficiency models available in the market. Look for systems that offer superior performance, reduced energy consumption, and lower emissions. Consider factors such as size compatibility, technological advancements, and any additional features that may benefit your specific needs.

After selecting the appropriate high-efficiency models, planning for installation is crucial. This phase involves logistical considerations such as scheduling downtime for installation without disrupting daily operations too much. Coordination with professionals who specialize in installing these new systems ensures a smooth transition and adherence to all safety standards.

During installation, it's important to ensure that all components are correctly fitted and integrated with existing infrastructure where applicable. Testing the new system thoroughly before fully commissioning it ensures that everything functions as expected and meets efficiency standards.

Post-installation monitoring is another vital aspect of converting to high-efficiency models. Regularly track performance metrics against those recorded during initial assessments to confirm anticipated improvements in efficiency and cost savings. Additionally, ongoing maintenance should be scheduled to keep these advanced systems operating optimally over time.

Finally, educating staff on operating new systems effectively can maximize benefits from these upgrades. Training sessions on using new technologies help prevent misuse or inefficiencies

arising from incorrect handling.

In conclusion, converting older units to high-efficiency models is a strategic move towards enhanced operational efficiency and environmental responsibility. By following a structured approach involving assessment, research, planning, installation, monitoring, and education-businesses can seamlessly transition into using more sustainable technology while reaping long-term economic benefits. Embracing this change not only aligns with modern sustainability goals but also positions organizations favorably in an increasingly eco-conscious market landscape.

Best Practices for Ensuring Structural Integrity During Installation and Maintenance

When contemplating the transition from older units to high-efficiency models, it is essential to delve into both the cost considerations and potential savings associated with such upgrades. As technology advances, homeowners and businesses alike are presented with opportunities to replace outdated systems with more energy-efficient solutions. This decision involves a careful evaluation of initial expenditures against long-term financial benefits.

Firstly, the cost considerations for upgrading to high-efficiency models can be substantial. These expenses include the purchase price of new equipment, installation fees, and any necessary modifications to existing infrastructure. For many, these upfront costs may seem daunting. However, it's important to recognize that newer models often come equipped with advanced technology that not only enhances performance but also reduces energy consumption significantly. Government incentives and rebates may be available as well, which can alleviate some of these financial burdens.

Despite these initial outlays, the potential savings over time often justify the investment in high-efficiency models. One of the most compelling arguments for upgrading is the reduction in utility bills. High-efficiency units are designed to use less energy while providing superior results compared to their older counterparts. This decrease in energy usage translates directly into lower monthly operating costs, allowing for substantial savings over time.

Moreover, high-efficiency models contribute positively to environmental sustainability by reducing carbon footprints and conserving resources. As awareness about climate change grows, both individuals and organizations are becoming more conscientious about their impact on the planet. By opting for energy-efficient solutions, users not only cut costs but also support global efforts towards a greener future.

In addition to financial and environmental benefits, there are other advantages worth considering when converting older units to high-efficiency models. Improved functionality often means enhanced comfort levels due to better temperature regulation or increased productivity from advanced features tailored specifically for modern needs.

In conclusion, while upgrading from older units to high-efficiency models involves considerable cost considerations upfront, the potential savings over time make it a worthwhile investment. Beyond monetary gains through reduced utility bills and possible government incentives lies an opportunity for significant positive impact on our environment-an aspect increasingly valued by society today. Therefore, approaching this decision requires weighing current expenses against future benefits while keeping in mind broader implications on sustainability objectives at large-a choice that promises returns far exceeding mere dollar amounts alone if executed thoughtfully aligned with one's overarching goals long-term vision forward-thinking approach strategic planning foresight-driven mindset proactive stance committed dedication purposeful intent aligned mission values core principles guiding action plan implementation process journey path undertaken pursuit achievement realization fulfillment aspirations dreams hopes ambitions desires intentions wishes visions objectives aims targets goals milestones benchmarks accomplishments successes triumphs victories glory honor dignity pride satisfaction contentment happiness joy peace tranquility harmony balance equilibrium stability security comfort safety assurance confidence trust faith belief conviction certainty likelihood probability plausibility feasibility possibility practicality realism pragmatism wisdom knowledge understanding insight foresight hindsight clarity perspective overview synopsis summary recapitulation reflection analysis evaluation assessment review examination investigation exploration inquiry study research discovery revelation enlightenment illumination comprehension grasp mastery expertise proficiency skill competence capability capacity ability talent aptitude genius brilliance intelligence acumen shrewdness astuteness cleverness craftiness cunning resourcefulness ingenuity inventiveness creativity originality innovation imagination vision foresight prudence caution circumspection discretion judgment discernment sagacity shrewdness perceptiveness acuteness keenness sharpness alertness attentiveness awareness mindfulness sensitivity delicacy subtlety nuance complexity sophistication

refinement elegance grace beauty charm allure appeal attraction magnetism charisma presence aura ambiance atmosphere environment setting backdrop context background foreground terrain landscape scenery vista panorama horizon skyline view sight spectacle marvel wonder miracle phenomenon occurrence happening event incident episode affair circumstance situation condition state status position standing rank level

As we navigate through the ever-evolving landscape of technology, one constant remains: the quest for efficiency. Whether it's a home heating system or an industrial machine, upgrading from older units to high-efficiency models is a pivotal step towards sustainability and cost-effectiveness. However, simply acquiring new systems is not enough; maintaining them for optimal performance is equally crucial. Here are some essential maintenance tips to ensure that your transition from older units to high-efficiency models achieves the desired results.

Firstly, understanding the operational intricacies of your new system is paramount. Unlike older models that often had straightforward mechanisms, high-efficiency systems come with complex components designed to enhance performance while conserving energy. Taking time to read the manual and familiarize yourself with these features can prevent costly errors and extend the lifespan of your equipment.

Regular cleaning and inspection should form the backbone of your maintenance routine. Dust and debris are silent saboteurs that compromise efficiency by clogging filters and reducing airflow. For HVAC systems or any machinery with ventilation components, this means higher energy consumption as the system works harder to achieve desired outputs. Regularly replacing filters and ensuring vents remain clear will keep your unit operating smoothly.

Next, integrate a schedule for professional servicing. While daily upkeep can be managed independently, certain tasks require expert intervention. Professionals possess the skills to conduct thorough inspections, identify minor issues before they escalate into major problems, and perform necessary calibrations that optimize system efficiency.

Monitoring system performance using built-in diagnostics tools or external monitoring software can provide invaluable insights into how well your unit is operating compared to its specifications. By tracking metrics like energy consumption, output levels, and operational hours, you can detect anomalies early on and address them promptly.

Moreover, educating all users on best practices plays a significant role in maintaining efficiency. This includes training staff or family members on how to operate the system correctly without overriding settings that could lead to inefficiencies or damage. Simple habits such as avoiding unnecessary usage during peak times or adjusting settings based on real-time needs contribute significantly towards sustaining performance over time.

Lastly, consider implementing auxiliary systems like programmable thermostats or smart controllers where applicable. These devices allow for automated adjustments based on specific conditions-such as time of day or occupancy levels-thus enhancing overall efficiency without constant human intervention.

In conclusion, transitioning from older units to high-efficiency models is a commendable step towards modernity and sustainability but requires diligent maintenance efforts to reap full benefits. By adopting comprehensive strategies encompassing education, regular upkeep by both users and professionals alike alongside leveraging technology-driven solutions; you can ensure these advanced systems deliver optimal results consistently across their operational lifespan while safeguarding against potential setbacks inherent within any technological upgrade journey.

About Heat pump

This article is about devices used to heat and potentially also cool a building (or water) using the refrigeration cycle. For more about the theory, see Heat pump and refrigeration cycle. For details of the most common type, see air source heat pump. For a similar device for cooling only, see air conditioner. For heat pumps used to keep food cool, see refrigerator. For other uses, see Heat pump (disambiguation).

Image not found or type unknown

External heat exchanger of an air-source heat pump for both heating and cooling

Image not found or type unknown

Mitsubishi heat pump interior air handler wall unit

- v
- t
- e

Part of a series on

Sustainable energy

A car drives past 4 wind turbines in a field, with more on the horizon

Image not found or type unknown

Energy conservation

- Arcology
- Building insulation
- Cogeneration
- Compact fluorescent lamp
- Eco hotel
- Eco-cities
- Ecohouse
- Ecolabel
- Efficient energy use
- Energy audit
- Energy efficiency implementation
- Energy recovery
- Energy recycling
- Energy saving lamp
- Energy Star
- Energy storage
- Environmental planning
- Environmental technology
- Fossil fuel phase-out
- Glass in green buildings
- Green building and wood
- Green building
- Heat pump
- List of low-energy building techniques
- Low-energy house
- Microgeneration
- Passive house
- Passive solar building design
- Sustainable architecture
- Sustainable city
- Sustainable habitat
- Sustainable refurbishment
- Thermal energy storage
- Tropical green building
- Waste-to-energy
- Zero heating building
- Zero-energy building

Renewable energy

- Biofuel
  - Sustainable
- Biogas
- Biomass
- Carbon-neutral fuel
- Geothermal energy
- Geothermal power
- Geothermal heating
- Hydropower
  - Hydroelectricity
  - Micro hydro
  - Pico hydro
  - Run-of-the-river
  - Small hydro
- Marine current power
- Marine energy
- Tidal power
  - Tidal barrage
  - Tidal farm
  - Tidal stream generator
- Ocean thermal energy conversion
- Renewable energy transition
- Renewable heat
- Solar
- Wave
- Wind
  - Community
  - Farm
  - Floating wind turbine
  - Forecasting
  - Industry
  - Lens
  - Outline
  - Rights
  - Turbine
  - Windbelt
  - Windpump

Sustainable transport

- Green vehicle
  - Electric vehicle
    - Bicycle
  - Solar vehicle
  - Wind-powered vehicle
- Hybrid vehicle
  - Human-electric
    - Twike
  - Plug-in
- Human-powered transport
  - Helicopter
  - Hydrofoil
  - Land vehicle
    - Bicycle
    - Cycle rickshaw
    - Kick scooter
    - Quadracycle
    - Tricycle
    - Velomobile
  - Roller skating
  - Skateboarding
  - Walking
  - Watercraft
- Personal transporter
- Rail transport
  - Tram
- Rapid transit
  - Personal rapid transit
- Category
- icoRenewable energy portal

A **heat pump** is a device that consumes energy (usually electricity) to transfer heat from a cold heat sink to a hot heat sink. Specifically, the heat pump transfers thermal energy using a refrigeration cycle, cooling the cool space and warming the warm space.[1] In cold weather, a heat pump can move heat from the cool outdoors to warm a house (e.g. winter); the pump may also be designed to move heat from the house to the warmer outdoors in warm weather (e.g. summer). As they transfer heat rather than generating heat, they are more energy-efficient than other ways of heating or cooling a home.[2]

A gaseous refrigerant is compressed so its pressure and temperature rise. When operating as a heater in cold weather, the warmed gas flows to a heat exchanger in the indoor space where some of its thermal energy is transferred to that indoor space, causing the gas to condense to its liquid state. The liquified refrigerant flows to a heat exchanger in the outdoor space where the pressure falls, the liquid evaporates and the temperature of the gas falls. It is now colder than the temperature of the outdoor space being used as a heat source. It can again take up energy from the heat source, be compressed and repeat the cycle.

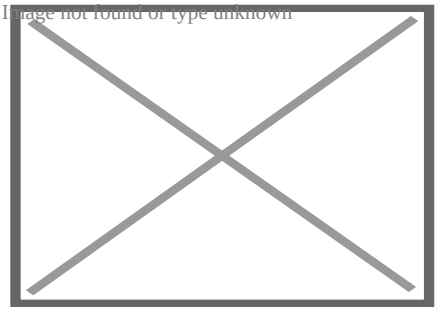
Air source heat pumps are the most common models, while other types include ground source heat pumps, water source heat pumps and exhaust air heat pumps.[3] Large-scale heat pumps are also used in district heating systems.[4]

The efficiency of a heat pump is expressed as a coefficient of performance (COP), or seasonal coefficient of performance (SCOP). The higher the number, the more efficient a heat pump is. For example, an air-to-water heat pump that produces 6kW at a SCOP of 4.62 will give over 4kW of energy into a heating system for every kilowatt of energy that the heat pump uses itself to operate. When used for space heating, heat pumps are typically more energy-efficient than electric resistance and other heaters.

Because of their high efficiency and the increasing share of fossil-free sources in electrical grids, heat pumps are playing a role in climate change mitigation.[5][6] Consuming 1 kWh of electricity, they can transfer 1[7] to 4.5 kWh of thermal energy into a building. The carbon footprint of heat pumps depends on how electricity is generated, but they usually reduce emissions.[8] Heat pumps could satisfy over 80% of global space and water heating needs with a lower carbon footprint than gas-fired condensing boilers: however, in 2021 they only met 10%.[4]

Principle of operation

[edit]



A: indoor compartment, B: outdoor compartment, I: insulation, 1: condenser, 2: expansion valve, 3: evaporator, 4: compressor

Main articles: Heat pump and refrigeration cycle and Vapor-compression refrigeration

Heat flows spontaneously from a region of higher temperature to a region of lower temperature. Heat does not flow spontaneously from lower temperature to higher, but it can be made to flow in this direction if work is performed. The work required to transfer a given amount of heat is usually much less than the amount of heat; this is the motivation for using heat pumps in applications such as the heating of water and the interior of buildings.[9]

The amount of work required to drive an amount of heat Q from a lower-temperature reservoir such as ambient air to a higher-temperature reservoir such as the interior of a building is: $\displaystyle W=\frac{Q}{\mathrm{COP}}$ where

- $\displaystyle W$ is the work performed on the working fluid by the heat pump's compressor.
- $\displaystyle Q$ is the heat transferred from the lower-temperature reservoir to the higher-temperature reservoir.
- $\displaystyle \mathrm{COP}$ is the instantaneous coefficient of performance for the heat pump at the temperatures prevailing in the reservoirs at one instant.

The coefficient of performance of a heat pump is greater than one so the work required is less than the heat transferred, making a heat pump a more efficient form of heating than electrical resistance heating. As the temperature of the higher-temperature reservoir increases in response to the heat flowing into it, the coefficient of performance decreases, causing an increasing amount of work to be required for each unit of heat being transferred.[9]

The coefficient of performance, and the work required by a heat pump can be calculated easily by considering an ideal heat pump operating on the reversed Carnot cycle:

- If the low-temperature reservoir is at a temperature of 270 K (?3 °C) and the interior of the building is at 280 K (7 °C) the relevant coefficient of performance is 27. This means only 1 joule of work is required to transfer 27 joules of heat from a reservoir at 270 K to another at 280 K. The one joule of work ultimately ends up as thermal energy in the interior of the building so for each 27 joules of heat that are removed from the low-temperature reservoir, 28 joules of heat are added to the building interior, making the heat pump even more attractive from an efficiency perspective.[note 1]
- As the temperature of the interior of the building rises progressively to 300 K (27 °C) the coefficient of performance falls progressively to 9. This means each joule of work is responsible for transferring 9 joules of heat out of the low-temperature reservoir and into the building. Again, the 1 joule of work ultimately ends up as thermal energy in the interior of the building so 10 joules of heat are added to the building interior.[note 2]

This is the theoretical amount of heat pumped but in practice it will be less for various reasons, for example if the outside unit has been installed where there is not enough airflow. More data sharing with owners and academics—perhaps from heat meters—could improve efficiency in the long run.[11]

History

[edit]

Milestones:

1748
: William Cullen demonstrates artificial refrigeration.[12]

1834
: Jacob Perkins patents a design for a practical refrigerator using dimethyl ether.[13]

1852
: Lord Kelvin describes the theory underlying heat pumps.[14]

1855–1857
: Peter von Rittinger develops and builds the first heat pump.[15]

1877
: In the period before 1875, heat pumps were for the time being pursued for vapour compression evaporation (open heat pump process) in salt works with their obvious advantages for saving wood and coal. In 1857, Peter von Rittinger was the first to try to implement the idea of vapor compression in a small pilot plant. Presumably inspired by Rittinger's experiments in Ebensee, Antoine-Paul Piccard from the University of Lausanne and the engineer J. H. Weibel from the Weibel–Briquet company in Geneva built the world's first really functioning vapor compression system with a two-stage piston compressor. In 1877 this first heat pump in Switzerland was installed in the Bex salt works.[14][16]

1928
: Aurel Stodola constructs a closed-loop heat pump (water source from Lake Geneva) which provides heating for the Geneva city hall to this day.[17]

1937–1945
: During the First World War, fuel prices were very high in Switzerland but it had plenty of hydropower.[14]
:ÃƒÆ'Ã†â€™Ãƒâ€ Ã¢â‚¬â„¢ÃƒÆ'Ã¢â‚¬Â ÃƒÂ¢Ã¢â€šÂ¬Ã¢â€žÂ¢ÃƒÆ'Ã†â€™ÃƒÂ¢Ã¢â
: In the period before and especially during the Second World War, when neutral Switzerland was completely surrounded by fascist-ruled countries, the coal shortage became alarming again. Thanks to their leading position in energy technology, the Swiss companies Sulzer, Escher Wyss and Brown Boveri built and put in operation around 35 heat pumps between 1937 and 1945. The main heat sources were lake water, river water, groundwater, and waste heat.

Particularly noteworthy are the six historic heat pumps from the city of Zurich with heat outputs from 100 kW to 6 MW. An international milestone is the heat pump built by Escher Wyss in 1937/38 to replace the wood stoves in the City Hall of Zurich. To avoid noise and vibrations, a recently developed rotary piston compressor was used. This historic heat pump heated the town hall for 63 years until 2001. Only then was it replaced by a new, more efficient heat pump.[14]

1945

John Sumner, City Electrical Engineer for Norwich, installs an experimental water-source heat pump fed central heating system, using a nearby river to heat new Council administrative buildings. It had a seasonal efficiency ratio of 3.42, average thermal delivery of 147 kW, and peak output of 234 kW.[18]

1948

Robert C. Webber is credited as developing and building the first ground-source heat pump.[19]

1951

First large scale installation—the Royal Festival Hall in London is opened with a town gas-powered reversible water-source heat pump, fed by the Thames, for both winter heating and summer cooling needs.[18]

2019

The Kigali Amendment to phase out harmful refrigerants takes effect.

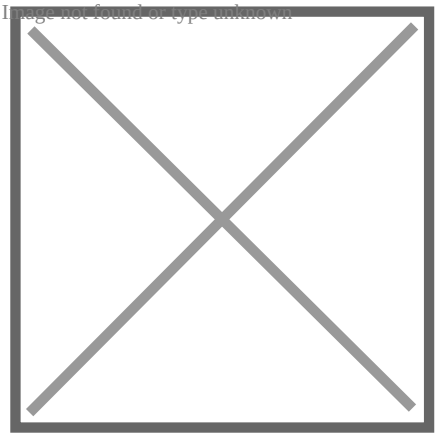
Types

[edit]

Air-source

[edit]

This section is an excerpt from Air source heat pump.[edit]



Heat pump on balcony of apartment

An air source heat pump (ASHP) is a heat pump that can absorb heat from air outside a building and release it inside; it uses the same vapor-compression refrigeration process and much the same equipment as an air conditioner, but in the opposite direction. ASHPs are the most common type of heat pump and, usually being smaller, tend to be used to heat individual houses or flats rather than blocks, districts or industrial processes.[20][21]

Air-to-air heat pumps provide hot or cold air directly to rooms, but do not usually provide hot water. *Air-to-water* heat pumps use radiators or underfloor heating to heat a whole house and are often also used to provide domestic hot water.

An ASHP can typically gain 4 kWh thermal energy from 1 kWh electric energy. They are optimized for flow temperatures between 30 and 40 °C (86 and 104 °F), suitable for buildings with heat emitters sized for low flow temperatures. With losses in efficiency, an ASHP can even provide full central heating with a flow temperature up to 80 °C (176 °F).[22]

As of 2023 about 10% of building heating worldwide is from ASHPs. They are the main way to phase out gas boilers (also known as "furnaces") from houses, to avoid their greenhouse gas emissions.[23]

Air-source heat pumps are used to move heat between two heat exchangers, one outside the building which is fitted with fins through which air is forced using a fan and the other which either directly heats the air inside the building or heats water which is then circulated around the building through radiators or underfloor heating which releases the heat to the building. These devices can also operate in a cooling mode where they extract heat via the internal heat exchanger and eject it into the ambient air using the external heat exchanger. Some can be used to heat water for washing which is stored in a domestic hot water tank.[24]

Air-source heat pumps are relatively easy and inexpensive to install, so are the most widely used type. In mild weather, coefficient of performance (COP) may be between 2 and 5, while at temperatures below around ?8 °C (18 °F) an air-source heat pump may still achieve a COP of 1 to 4.[25]

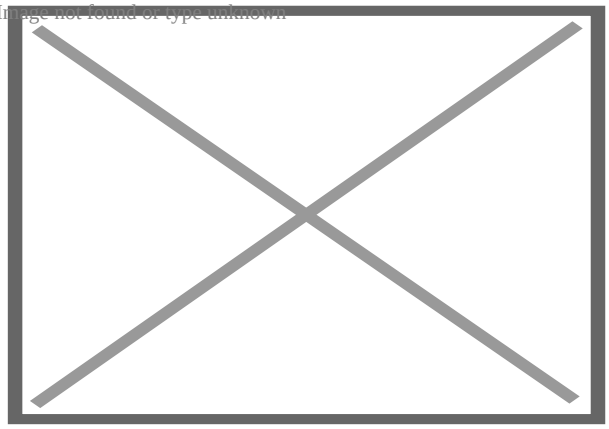
While older air-source heat pumps performed relatively poorly at low temperatures and were better suited for warm climates, newer models with variable-speed compressors remain highly efficient in freezing conditions allowing for wide adoption and cost savings in places like Minnesota and Maine in the United States.[26]

Ground source

[edit]

This section is an excerpt from Ground source heat pump.[edit]

Image not found or type unknown



A heat pump in combination with heat and cold storage

A ground source heat pump (also geothermal heat pump) is a heating/cooling system for buildings that use a type of heat pump to transfer heat to or from the ground, taking advantage of the relative constancy of temperatures of the earth through the seasons. Ground-source heat pumps (GSHPs) – or geothermal heat pumps (GHP), as they are commonly termed in North America – are among the most energy-efficient technologies for providing HVAC and water heating, using far less energy than can be achieved by burning a fuel in a boiler/furnace or by use of resistive electric heaters.

Efficiency is given as a coefficient of performance (CoP) which is typically in the range 3 – 6, meaning that the devices provide 3 – 6 units of heat for each unit of electricity used. Setup costs are higher than for other heating systems, due to the requirement to install ground loops over large areas or to drill bore holes, and for this reason, ground source is often suitable when new blocks of flats are built.[27] Otherwise air-source heat pumps are often used instead.

Heat recovery ventilation

[edit]
Main article: Heat recovery ventilation

Exhaust air heat pumps extract heat from the exhaust air of a building and require mechanical ventilation. Two classes exist:

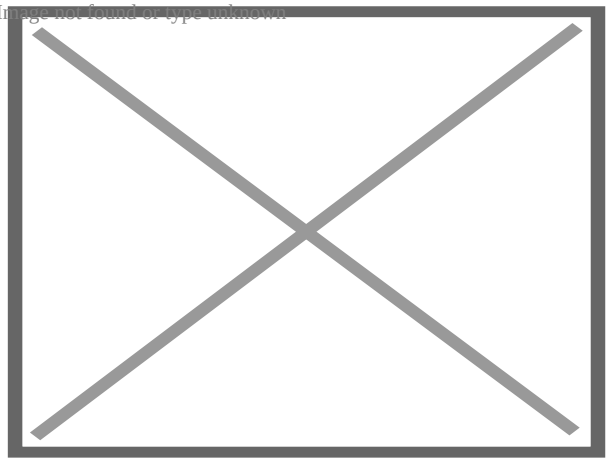
- Exhaust air-air heat pumps transfer heat to intake air.
- Exhaust air-water heat pumps transfer heat to a heating circuit that includes a tank of domestic hot water.

Solar-assisted

[edit]

This section is an excerpt from Solar-assisted heat pump.[edit]

Image not found or type unknown



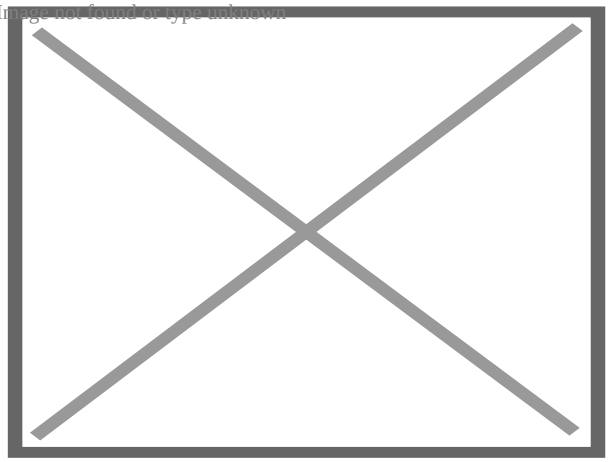
Hybrid photovoltaic-thermal solar panels of a SAHP in an experimental installation at Department of Energy at Polytechnic of Milan

A solar-assisted heat pump (SAHP) is a machine that combines a heat pump and thermal solar panels and/or PV solar panels in a single integrated system.[28] Typically these two technologies are used separately (or only placing them in parallel) to produce hot water.[29] In this system the solar thermal panel performs the function of the low temperature heat source and the heat produced is used to feed the heat pump's evaporator.[30] The goal of this system is to get high coefficient of performance (COP) and then produce energy in a more efficient and less expensive way.
It is possible to use any type of solar thermal panel (sheet and tubes, roll-bond, heat pipe, thermal plates) or hybrid (mono/polycrystalline, thin film) in combination with the heat pump. The use of a hybrid panel is preferable because it allows covering a part of the electricity demand of the heat pump and reduce the power consumption and consequently the variable costs of the system.

Water-source

[edit]

Image not found or type unknown



Water-source heat exchanger being installed

A water-source heat pump works in a similar manner to a ground-source heat pump, except that it takes heat from a body of water rather than the ground. The body of water does, however, need to be large enough to be able to withstand the cooling effect of the unit without freezing or creating an adverse effect for wildlife.[31] The largest water-source heat pump was installed in the Danish town of Esbjerg in 2023.[32][33]

Others

[edit]

A thermoacoustic heat pump operates as a thermoacoustic heat engine without refrigerant but instead uses a standing wave in a sealed chamber driven by a loudspeaker to achieve a temperature difference across the chamber.[34]

Electrocaloric heat pumps are solid state.[35]

Applications

[edit]

The International Energy Agency estimated that, as of 2021, heat pumps installed in buildings have a combined capacity of more than 1000 GW.[4] They are used for heating, ventilation, and air conditioning (HVAC) and may also provide domestic hot water and tumble clothes drying.[36] The purchase costs are supported in various countries by consumer rebates.[37]

Space heating and sometimes also cooling

[edit]

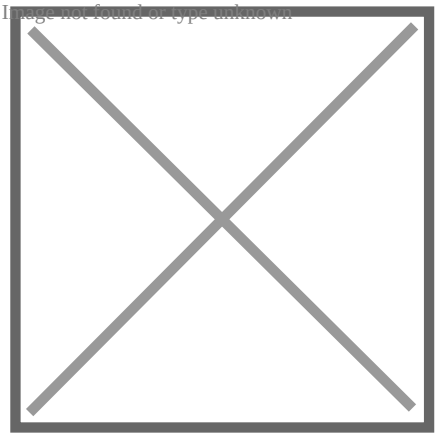
In HVAC applications, a heat pump is typically a vapor-compression refrigeration device that includes a reversing valve and optimized heat exchangers so that the direction of *heat flow* (thermal energy movement) may be reversed. The reversing valve switches the direction of refrigerant through the cycle and therefore the heat pump may deliver either heating or cooling to a building.

Because the two heat exchangers, the condenser and evaporator, must swap functions, they are optimized to perform adequately in both modes. Therefore, the Seasonal Energy Efficiency Rating (SEER in the US) or European seasonal energy efficiency ratio of a reversible heat pump is typically slightly less than those of two separately optimized machines. For equipment to receive the US Energy Star rating, it must have a rating of at least 14 SEER. Pumps with ratings of 18 SEER or above are considered highly efficient. The highest efficiency heat pumps manufactured are up to 24 SEER.[38]

Heating seasonal performance factor (in the US) or Seasonal Performance Factor (in Europe) are ratings of heating performance. The SPF is Total heat output per annum / Total electricity consumed per annum in other words the average heating COP over the year.[39]

Window mounted heat pump

[edit]



Saddle-style window mounted heat pump 3D sketch

Window mounted heat pumps run on standard 120v AC outlets and provide heating, cooling, and humidity control. They are more efficient with lower noise levels, condensation management, and a smaller footprint than window mounted air conditioners that just do cooling.[40]

Water heating

[edit]

In water heating applications, heat pumps may be used to heat or preheat water for swimming pools, homes or industry. Usually heat is extracted from outdoor air and transferred to an indoor water tank.[41][42]

District heating

[edit]

Large (megawatt-scale) heat pumps are used for district heating.[43] However as of 2022 about 90% of district heat is from fossil fuels.[44] In Europe, heat pumps account for a mere 1% of heat supply in district heating networks but several countries have targets to decarbonise their networks between 2030 and 2040.[4] Possible sources of heat for such applications are sewage water, ambient water (e.g. sea, lake and river water), industrial waste heat, geothermal energy, flue gas, waste heat from district cooling and heat from solar seasonal thermal energy storage.[45] Large-scale heat pumps for district heating combined with thermal energy storage offer high flexibility for the integration of variable renewable energy. Therefore, they are regarded as a key technology for limiting climate change by phasing out fossil fuels.[45][46] They are also a crucial element of systems which can both heat and cool districts.[47]

Industrial heating

[edit]

There is great potential to reduce the energy consumption and related greenhouse gas emissions in industry by application of industrial heat pumps, for example for process heat.[48][49] Short payback periods of less than 2 years are possible, while achieving a high reduction of CO_2 emissions (in some cases more than 50%).[50][51] Industrial heat pumps can heat up to 200 °C, and can meet the heating demands of many light industries.[52][53] In Europe alone, 15 GW of heat pumps could be installed in 3,000 facilities in the paper, food and chemicals industries.[4]

Performance

[edit]
Main article: Coefficient of performance

The performance of a heat pump is determined by the ability of the pump to extract heat from a low temperature environment (the *source*) and deliver it to a higher temperature environment (the *sink*).[54] Performance varies, depending on installation details, temperature differences, site elevation, location on site, pipe runs, flow rates, and maintenance.

In general, heat pumps work most efficiently (that is, the heat output produced for a given energy input) when the difference between the heat source and the heat sink is small. When using a heat pump for space or water heating, therefore, the heat pump will be most efficient in mild conditions, and decline in efficiency on very cold days. Performance metrics supplied to consumers attempt to take this variation into account.

Common performance metrics are the SEER (in cooling mode) and seasonal coefficient of performance (SCOP) (commonly used just for heating), although SCOP can be used for both modes of operation.[54] Larger values of either metric indicate better performance.[54] When comparing the performance of heat pumps, the term *performance* is preferred to *efficiency*, with coefficient of performance (COP) being used to describe the ratio of useful heat movement per work input.[54] An electrical resistance heater has a COP of 1.0, which is considerably lower than a well-designed heat pump which will typically have a COP of 3 to 5 with an external temperature of 10 °C and an internal temperature of 20 °C. Because the ground is a constant temperature source, a ground-source heat pump is not subjected to large temperature fluctuations, and therefore is the most energy-efficient type of heat pump.[54]

The "seasonal coefficient of performance" (SCOP) is a measure of the aggregate energy efficiency measure over a period of one year which is dependent on regional climate.[54] One framework for this calculation is given by the Commission Regulation (EU) No. 813/2013.[55]

A heat pump's operating performance in cooling mode is characterized in the US by either its energy efficiency ratio (EER) or seasonal energy efficiency ratio (SEER), both of which have units of BTU/(h·W) (note that 1 BTU/(h·W) = 0.293 W/W) and larger values indicate better performance.

		COP variation with output temperature
Pump type and source	**Typical use**	**35 °C (e.g. heated screed floor)**

High-efficiency air-source heat pump (ASHP), air at ?20 °C[56]		2.2	
Two-stage ASHP, air at ?20 °C[57]	Low source temperature	*2.4*	
High-efficiency ASHP, air at 0 °C[56]	Low output temperature	*3.8*	
Prototype transcritical CO_2 (R744) heat pump with tripartite gas cooler, source at 0 °C[58]	High output temperature	3.3	Ãƒ Æ’Ã†â€™Ãƒâ€ Ã¢â‚¬â„¢Ãƒ Æ’Ã¢â‚¬Â Ãƒ Â¢Ã¢€šÂ¬Ã¢€
Ground-source heat pump (GSHP), water at 0 °C[56]		5.0	
GSHP, ground at 10 °C[56]	Low output temperature	*7.2*	
Theoretical Carnot cycle limit, source ?20 °C		5.6	

Theoretical Carnot cycle limit, source 0 °C	8.8
Theoretical Lorentzen cycle limit (CO_2 pump), return fluid 25 °C, source 0 °C[58]	10.1
Theoretical Carnot cycle limit, source 10 °C	12.3

Carbon footprint

[edit]

The carbon footprint of heat pumps depends on their individual efficiency and how electricity is produced. An increasing share of low-carbon energy sources such as wind and solar will lower the impact on the climate.

heating system	emissions of energy source	efficiency	resulting emissions for thermal energy
heat pump with onshore wind power	11 gCO_2/kWh[59]	400% (COP=4)	3 gCO_2/kWh
heat pump with global electricity mix	436 gCO_2/kWh[60] (2022)	400% (COP=4)	109 gCO_2/kWh
natural-gas thermal (high efficiency)	201 gCO_2/kWh[61]	90%[*citation needed*]	223 gCO_2/kWh
heat pump electricity by lignite (old power plant) and low performance	1221 gCO_2/kWh[61]	300% (COP=3)	407 gCO_2/kWh

In most settings, heat pumps will reduce CO_2 emissions compared to heating systems powered by fossil fuels.[62] In regions accounting for 70% of world energy consumption, the emissions savings of heat pumps compared with a high-efficiency gas boiler are on average above 45% and reach 80% in countries with cleaner electricity mixes.[4] These values can be improved by 10 percentage points, respectively, with alternative refrigerants. In the United States, 70% of houses could reduce emissions by installing a heat pump.[63][4] The rising share of renewable electricity generation in many countries is set to increase the emissions savings from heat pumps over time.[4]

Heating systems powered by green hydrogen are also low-carbon and may become competitors, but are much less efficient due to the energy loss associated with hydrogen conversion, transport and use. In addition, not enough green hydrogen is expected to be available before the 2030s or 2040s.[64][65]

Operation

[edit]

See also: Vapor-compression refrigeration

This section **needs additional citations for verification**. Please help improve this article by adding citations to reliable sources in this section. Unsourced material may be challenged and removed. *(May 2021) (Learn how and when to remove this message)*

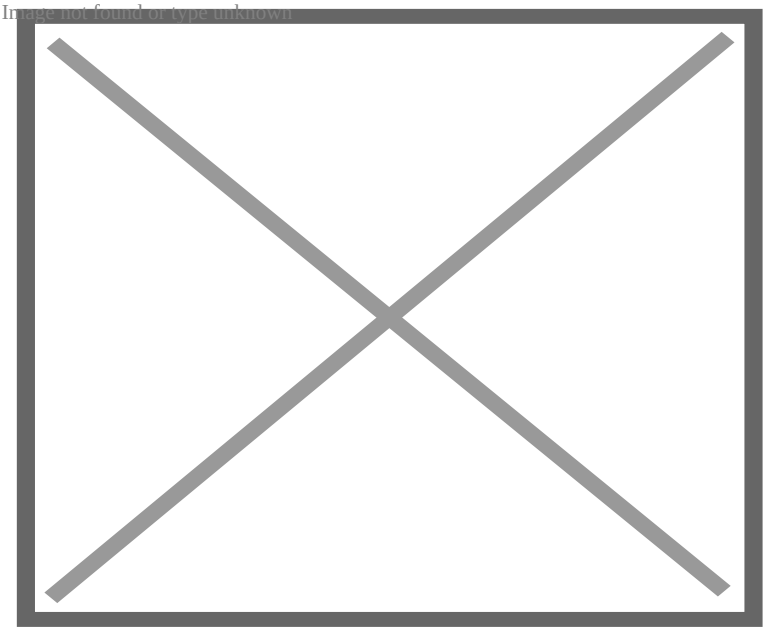


Figure 2: Temperature–entropy diagram of the vapor-compression cycle

Image not found or type unknown

An internal view of the outdoor unit of an Ecodan air source heat pump

Image not found or type unknown

Large heat pump setup for a commercial building

Image not found or type unkn

Wiring and connections to a central air unit inside

Vapor-compression uses a circulating refrigerant as the medium which absorbs heat from one space, compresses it thereby increasing its temperature before releasing it in another space. The system normally has eight main components: a compressor, a reservoir, a reversing valve which selects between heating and cooling mode, two thermal expansion valves (one used when in heating mode and the other when used in cooling mode) and two heat exchangers, one associated with the external heat

source/sink and the other with the interior. In heating mode the external heat exchanger is the evaporator and the internal one being the condenser; in cooling mode the roles are reversed.

Circulating refrigerant enters the compressor in the thermodynamic state known as a saturated vapor[66] and is compressed to a higher pressure, resulting in a higher temperature as well. The hot, compressed vapor is then in the thermodynamic state known as a superheated vapor and it is at a temperature and pressure at which it can be condensed with either cooling water or cooling air flowing across the coil or tubes. In heating mode this heat is used to heat the building using the internal heat exchanger, and in cooling mode this heat is rejected via the external heat exchanger.

The condensed, liquid refrigerant, in the thermodynamic state known as a saturated liquid, is next routed through an expansion valve where it undergoes an abrupt reduction in pressure. That pressure reduction results in the adiabatic flash evaporation of a part of the liquid refrigerant. The auto-refrigeration effect of the adiabatic flash evaporation lowers the temperature of the liquid and-vapor refrigerant mixture to where it is colder than the temperature of the enclosed space to be refrigerated.

The cold mixture is then routed through the coil or tubes in the evaporator. A fan circulates the warm air in the enclosed space across the coil or tubes carrying the cold refrigerant liquid and vapor mixture. That warm air evaporates the liquid part of the cold refrigerant mixture. At the same time, the circulating air is cooled and thus lowers the temperature of the enclosed space to the desired temperature. The evaporator is where the circulating refrigerant absorbs and removes heat which is subsequently rejected in the condenser and transferred elsewhere by the water or air used in the condenser.

To complete the refrigeration cycle, the refrigerant vapor from the evaporator is again a saturated vapor and is routed back into the compressor.

Over time, the evaporator may collect ice or water from ambient humidity. The ice is melted through defrosting cycle. An internal heat exchanger is either used to heat/cool the interior air directly or to heat water that is then circulated through radiators or underfloor heating circuit to either heat or cool the buildings.

Improvement of coefficient of performance by subcooling

[edit]
Main article: Subcooling

Heat input can be improved if the refrigerant enters the evaporator with a lower vapor content. This can be achieved by cooling the liquid refrigerant after condensation. The gaseous refrigerant condenses on the heat exchange surface of the condenser. To achieve a heat flow from the gaseous flow center to the wall of the condenser, the temperature of the liquid refrigerant must be lower than the condensation temperature.

Additional subcooling can be achieved by heat exchange between relatively warm liquid refrigerant leaving the condenser and the cooler refrigerant vapor emerging from the evaporator. The enthalpy difference required for the subcooling leads to the superheating of the vapor drawn into the compressor. When the increase in cooling achieved by subcooling is greater that the compressor drive input required to overcome the additional pressure losses, such a heat exchange improves the coefficient of performance.[67]

One disadvantage of the subcooling of liquids is that the difference between the condensing temperature and the heat-sink temperature must be larger. This leads to a moderately high pressure difference between condensing and evaporating pressure, whereby the compressor energy increases.

Refrigerant choice

[edit]
Main article: Refrigerant

Pure refrigerants can be divided into organic substances (hydrocarbons (HCs), chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs), hydrofluorocarbons (HFCs), hydrofluoroolefins (HFOs), and HCFOs), and inorganic substances (ammonia (NH_3), carbon dioxide (CO_2), and water (H_2O)[68]).[69] Their boiling points are usually below ?25 °C.[70]

In the past 200 years, the standards and requirements for new refrigerants have changed. Nowadays low global warming potential (GWP) is required, in addition to all the previous requirements for safety, practicality, material compatibility, appropriate atmospheric life,[*clarification needed*] and compatibility with high-efficiency products. By 2022, devices using refrigerants with a very low GWP still have a small market share but are expected to play an increasing role due to enforced regulations,[71] as most countries have now ratified the Kigali Amendment to ban HFCs.[72] Isobutane (R600A) and propane (R290) are far less harmful to the environment than conventional hydrofluorocarbons (HFC) and are already being used in air-source heat pumps.[73] Propane may be the most suitable for high temperature heat pumps.[74] Ammonia (R717) and carbon dioxide (R-744) also have a low GWP. As of 2023 smaller CO

$_2$ heat pumps are not widely available and research and development of them continues.[75] A 2024 report said that refrigerants with GWP are vulnerable to further international restrictions.[76]

Until the 1990s, heat pumps, along with fridges and other related products used chlorofluorocarbons (CFCs) as refrigerants, which caused major damage to the ozone layer when released into the atmosphere. Use of these chemicals was banned or severely restricted by the Montreal Protocol of August 1987.[77]

Replacements, including R-134a and R-410A, are hydrofluorocarbons (HFC) with similar thermodynamic properties with insignificant ozone depletion potential (ODP) but had problematic GWP.[78] HFCs are powerful greenhouse gases which contribute to climate change.[79][80] Dimethyl ether (DME) also gained in popularity as a refrigerant in combination with R404a.[81] More recent refrigerants include difluoromethane (R32) with a lower GWP, but still over 600.

refrigerant	20-year GWP	100-year GWP
R-290 propane[82]	0.072	0.02
R-600a isobutane		3[83]
R-32[82]	491	136
R-410a[84]	4705	2285
R-134a[84]	4060	1470
R-404a[84]	7258	4808

Devices with R-290 refrigerant (propane) are expected to play a key role in the future.[74][85] The 100-year GWP of propane, at 0.02, is extremely low and is approximately 7000 times less than R-32. However, the flammability of propane requires additional safety measures: the maximum safe charges have been set significantly lower than for lower flammability refrigerants (only allowing approximately 13.5 times less refrigerant in the system than R-32).[86][87][88] This means that R-290 is not suitable for all situations or locations. Nonetheless, by 2022, an increasing number of devices with R-290 were offered for domestic use, especially in Europe.[*citation needed*]

At the same time,[*when?*] HFC refrigerants still dominate the market. Recent government mandates have seen the phase-out of R-22 refrigerant. Replacements such as R-32 and R-410A are being promoted as environmentally friendly but still have a high GWP.[89] A heat pump typically uses 3 kg of refrigerant. With R-32 this amount still has a 20-year impact equivalent to 7 tons of CO_2, which corresponds to two years of natural gas heating in an average household. Refrigerants with a high ODP have already been phased out.[*citation needed*]

Government incentives

[edit]

Financial incentives aim to protect consumers from high fossil gas costs and to reduce greenhouse gas emissions,[90] and are currently available in more than 30 countries around the world, covering more than 70% of global heating demand in 2021.[4]

Australia

[edit]

Food processors, brewers, petfood producers and other industrial energy users are exploring whether it is feasible to use renewable energy to produce industrial-grade heat. Process heating accounts for the largest share of onsite energy use in Australian manufacturing, with lower-temperature operations like food production particularly well-suited to transition to renewables.

To help producers understand how they could benefit from making the switch, the Australian Renewable Energy Agency (ARENA) provided funding to the Australian Alliance for Energy Productivity (A2EP) to undertake pre-feasibility studies at a range of sites around Australia, with the most promising locations advancing to full feasibility studies.[91]

In an effort to incentivize energy efficiency and reduce environmental impact, the Australian states of Victoria, New South Wales, and Queensland have implemented rebate programs targeting the upgrade of existing hot water systems. These programs specifically encourage the transition from traditional gas or electric systems to heat pump based systems.[92][93][94][95][96]

Canada

[edit]

In 2022, the Canada Greener Homes Grant[97] provides up to $5000 for upgrades (including certain heat pumps), and $600 for energy efficiency evaluations.

China

[edit]

Purchase subsidies in rural areas in the 2010s reduced burning coal for heating, which had been causing ill health.[98]

In the 2024 report by the International Energy Agency (IEA) titled "The Future of Heat Pumps in China," it is highlighted that China, as the world's largest market for heat pumps in buildings, plays a critical role in the global industry. The country accounts for over one-quarter of global sales, with a 12% increase in 2023 alone, despite a global sales dip of 3% the same year.[99]

Heat pumps are now used in approximately 8% of all heating equipment sales for buildings in China as of 2022, and they are increasingly becoming the norm in central and southern regions for both heating and cooling. Despite their higher upfront costs and relatively low awareness, heat pumps are favored for their energy efficiency, consuming three to five times less energy than electric heaters or fossil fuel-based solutions. Currently, decentralized heat pumps installed in Chinese buildings represent a quarter of the global installed capacity, with a total capacity exceeding 250 GW, which covers around 4% of the heating needs in buildings.[99]

Under the Announced Pledges Scenario (APS), which aligns with China's carbon neutrality goals, the capacity is expected to reach 1,400 GW by 2050, meeting 25% of heating needs. This scenario would require an installation of about 100 GW of heat pumps annually until 2050. Furthermore, the heat pump sector in China employs over 300,000 people, with employment numbers expected to double by 2050, underscoring the importance of vocational training for industry growth. This robust development in the heat pump market is set to play a significant role in reducing direct emissions in buildings by 30% and cutting PM2.5 emissions from residential heating by nearly 80% by 2030.[99][100]

European Union

[edit]

To speed up the deployment rate of heat pumps, the European Commission launched the Heat Pump Accelerator Platform in November 2024.[101] It will encourage industry experts, policymakers, and stakeholders to collaborate, share best practices and ideas, and jointly discuss measures that promote sustainable heating solutions.[102]

United Kingdom

[edit]

As of 2022: heat pumps have no Value Added Tax (VAT) although in Northern Ireland they are taxed at the reduced rate of 5% instead of the usual level of VAT of 20% for most other products.[103] As of 2022 the installation cost of a heat pump is more than a gas boiler, but with the "Boiler Upgrade Scheme"[104] government grant and assuming electricity/gas costs remain similar their lifetime costs would be similar on average.[105] However lifetime cost relative to a gas boiler varies considerably depending on several factors, such as the quality of the heat pump installation and the tariff used.[106] In 2024 England was criticised for still allowing new homes to be built with gas boilers, unlike some other counties where this is banned.[107]

United States

[edit]
Further information: Environmental policy of the Joe Biden administration and Climate change in the United States

The High-efficiency Electric Home Rebate Program was created in 2022 to award grants to State energy offices and Indian Tribes in order to establish state-wide high-efficiency electric-home rebates. Effective immediately, American households are eligible for a tax credit to cover the costs of buying and installing a heat pump, up to $2,000. Starting in 2023, low- and moderate-level income households will be eligible for a heat-pump rebate of up to $8,000.[108]

In 2022, more heat pumps were sold in the United States than natural gas furnaces.[109]

In November 2023 Biden's administration allocated 169 million dollars from the Inflation Reduction Act to speed up production of heat pumps. It used the Defense Production Act to do so, because according to the administration, energy that is better for the climate is also better for national security.[110]

Notes

[edit]

1. **^** As explained in Coefficient of performance TheoreticalMaxCOP = (desiredIndoorTempC + 273) ÷ (desiredIndoorTempC - outsideTempC) = (7+273) ÷ (7 - (-3)) = 280÷10 = 28 [10]
2. **^** As explained in Coefficient of performance TheoreticalMaxCOP = (desiredIndoorTempC + 273) ÷ (desiredIndoorTempC - outsideTempC) = (27+273) ÷ (27 - (-3)) = 300÷30 = 10 [10]

References

[edit]

1. ^ *"Heat Pump Systems". Energy.gov. Retrieved 26 March 2024.*
2. ^ *"Heat Pump Systems". US Department of Energy. Archived from the original on 27 April 2023. Retrieved 27 April 2023.*
3. ^ *"Exhaust air heat pumps". Energy Saving Trust. Retrieved 22 February 2024.*
4. ^ ***a b c d e f g h i*** *Technology Report: The Future of Heat Pumps. International Energy Agency (Report). November 2022. Archived from the original on 6 January 2023. Retrieved 6 January 2023.* License: CC BY 4.0.
5. ^ IPCC AR6 WG3 Ch11 2022, Sec. 11.3.4.1.
6. ^ IPCC SR15 Ch2 2018, p. 142.
7. ^ *Everitt, Neil (11 September 2023). "Study proves heat pump efficiency at low temperatures". Cooling Post. Retrieved 22 January 2024.*
8. ^ *Deetjen, Thomas A.; Walsh, Liam; Vaishnav, Parth (28 July 2021). "US residential heat pumps: the private economic potential and its emissions, health, and grid impacts". Environmental Research Letters. **16** (8): 084024. Bibcode:2021ERL....16h4024D. doi:10.1088/1748-9326/ac10dc. ISSN 1748-9326. S2CID 236486619.*
9. ^ ***a b*** G. F. C. Rogers and Y. R. Mayhew (1957), *Engineering Thermodynamics, Work and Heat Transfer*, Section 13.1, Longmans, Green & Company Limited.
10. ^ ***a b*** *"Is there some theoretical maximum coefficient of performance (COP) for heat pumps and chillers?". Physics Stack Exchange. Retrieved 22 February 2024 .*
11. ^ *Williamson, Chris (13 October 2022). "Heat pumps are great. Let's make them even better". All you can heat. Retrieved 22 February 2024.*
12. ^ *"The often forgotten Scottish inventor whose innovation changed the world". The National. 10 April 2022. Retrieved 21 February 2024.*
13. ^ *Bathe, Greville; Bathe, Dorothy (1943). Jacob Perkins, his inventions, his times, & his contemporaries. The Historical Society of Pennsylvania. p. 149.*
14. ^ ***a b c d*** *"History of Heat Pumping Technologies in Switzerland – Texts". www.aramis.admin.ch. Archived from the original on 23 November 2021. Retrieved 14 September 2023.*
15. ^ *Banks, David L. (6 May 2008). An Introduction to Thermogeology: Ground Source Heating and Cooling (PDF). Wiley-Blackwell. ISBN 978-1-4051-7061-1. Archived (PDF) from the original on 20 December 2016. Retrieved 5 March 2014.*
16. ^ *Wirth, E. (1955), Aus der Entwicklungsgeschichte der Wärmepumpe, Schweizerische Bauzeitung (in German), vol. 73, pp. 647–650, archived from the original on 20 November 2021, retrieved 20 November 2021*
17. ^ *Randall, Ian (31 July 2022). "Heat pumps: The centuries-old system now at the heart of the Government's energy strategy". Daily Express. Retrieved 16 March 2024.*
18. ^ ***a b*** *Electricity supply in the United Kingdom : a chronology – from the beginnings of the industry to 31 December 1985. The Electricity Council. 1987. ISBN 978-0851881058. OCLC 17343802.*

19. ^ *Banks, David (August 2012). An Introduction to Thermogeology: Ground Source Heating and Cooling. John Wiley & Sons. p. 123.*
20. ^ *"Why Britain's homes will need different types of heat pump". The Economist. ISSN 0013-0613. Retrieved 19 February 2024.*
21. ^ *"What is an Air-Source Heat Pump? A Complete Guide In 2024". NEWNTIDE. 24 October 2024. Retrieved 30 September 2024.*
22. ^ *Le, Khoa; Huang, M.J.; Hewitt, Neil (2018). "Domestic High Temperature Air Source Heat Pump: Performance Analysis Using TRNSYS Simulations". International High Performance Buildings Conference. West Lafayette, IN, USA: 5th International High Performance Buildings Conference at Purdue University: 1. Retrieved 20 February 2022.*
23. ^ *"Heat pumps show how hard decarbonisation will be". The Economist. ISSN 0013-0613. Retrieved 14 September 2023.*
24. ^ *Lawrence, Karen. "Air source heat pumps explained". Which?. Archived from the original on 4 October 2022. Retrieved 4 October 2022.*
25. ^ *Canada, Natural Resources (22 April 2009). "Heating and Cooling With a Heat Pump". natural-resources.canada.ca. Retrieved 22 February 2024.*
26. ^ *"Heat pumps do work in the cold – Americans just don't know it yet". Grist. 9 May 2022. Archived from the original on 9 May 2022. Retrieved 9 May 2022.*
27. ^ *"Heat pumps are hot items. But for people living in condos, getting one presents some challenges".*
28. ^ *Sezen, Kutbay; Gungor, Afsin (1 January 2023). "Comparison of solar assisted heat pump systems for heating residences: A review". Solar Energy. **249**: 424–445. doi:10.1016/j.solener.2022.11.051. ISSN 0038-092X. "Photovoltaic-thermal direct expansion solar assisted heat pump (PV/T-DX-SAHP) system enables to benefit the waste heat for evaporation of refrigerant in PV/T collector-evaporator, while providing better cooling for PV cells (Yao et al., 2020)."*
29. ^ *"Solar-assisted heat pumps". Archived from the original on 28 February 2020. Retrieved 21 June 2016.*
30. ^ *"Pompe di calore elio-assistite" (in Italian). Archived from the original on 7 January 2012. Retrieved 21 June 2016.*
31. ^ *Energy Saving Trust (13 February 2019). "Could a water source heat pump work for you?". Energy Saving Trust. Archived from the original on 4 October 2022. Retrieved 4 October 2022.*
32. ^ *Baraniuk, Chris (29 May 2023). "The 'exploding' demand for giant heat pumps". BBC News. Archived from the original on 7 September 2023. Retrieved 19 September 2023.*
33. ^ *Ristau, Oliver (24 July 2022). "Energy transition, the Danish way". DW. Archived from the original on 9 August 2023. Retrieved 19 September 2023.*
34. ^ *Padavic-Callaghan, Karmela (6 December 2022). "Heat pump uses a loudspeaker and wet strips of paper to cool air". New Scientist. Archived from the original on 4 January 2023. Retrieved 4 January 2023.*

35. ^ *Everitt, Neil (14 August 2023). "Scientists claim solid-state heat pump breakthrough". Cooling Post. Archived from the original on 24 September 2023. Retrieved 17 September 2023.*
36. ^ *"Heat Pump Systems". U.S. Department of Energy. Archived from the original on 4 July 2017. Retrieved 5 February 2016.*
37. ^ *"Renewable Heat Incentive – Domestic RHI – paid over 7 years". Ground Source Heat Pump Association. Archived from the original on 8 March 2018. Retrieved 12 March 2017.*
38. ^ *"Heat Pump Efficiency | Heat Pump SEER Ratings". Carrier. Archived from the original on 14 January 2023. Retrieved 14 January 2023.*
39. ^ *"COP and SPF for Heat Pumps Explained". Green Business Watch UK. 7 November 2019. Retrieved 22 February 2024.*
40. ^ *"Why This Window Heat Pump is Genius – Undecided with Matt Ferrell". 11 June 2024.*
41. ^ *"How it Works — Heat Pump Water Heaters (HPWHs)". www.energystar.gov. Retrieved 22 January 2024.*
42. ^ *"Heat-pump hot water systems". Sustainability Victoria. Retrieved 22 January 2024.*
43. ^ *Baraniuk, Chris (29 May 2023). "The 'exploding' demand for giant heat pumps". BBC News. Archived from the original on 7 September 2023. Retrieved 17 September 2023.*
44. ^ *"District Heating – Energy System". IEA. Retrieved 22 January 2024.*
45. ^ ***a b*** *David, Andrei; et al. (2017). "Heat Roadmap Europe: Large-Scale Electric Heat Pumps in District Heating Systems". Energies.* ***10*** *(4): 578. doi: 10.3390/en10040578.*
46. ^ *Sayegh, M. A.; et al. (2018). "Heat pump placement, connection and operational modes in European district heating". Energy and Buildings.* ***166****: 122–144. Bibcode:2018EneBu.166..122S. doi:10.1016/j.enbuild.2018.02.006. Archived from the original on 14 December 2019. Retrieved 10 July 2019.*
47. ^ *Buffa, Simone; et al. (2019), "5th generation district heating and cooling systems: A review of existing cases in Europe", Renewable and Sustainable Energy Reviews (in German), vol. 104, pp. 504–522, doi: 10.1016/j.rser.2018.12.059*
48. ^ *"Home". Annex 35. Retrieved 22 February 2024.*
49. ^ *"Industrial Heat Pumps: it's time to go electric". World Business Council for Sustainable Development (WBCSD). Retrieved 22 February 2024.*
50. ^ IEA HPT TCP Annex 35 Publications Archived 2018-09-21 at the Wayback Machine
51. ^ *"Application of Industrial Heat Pumps. Annex 35 two-page summary". HPT – Heat Pumping Technologies. Retrieved 28 December 2023.*
52. ^ *"Norwegian Researchers Develop World's Hottest Heat Pump". Ammonia21. 5 August 2021. Archived from the original on 23 May 2022. Retrieved 7 June 2022.*

53. **^** *"Heat pumps are key to helping industry turn electric". World Business Council for Sustainable Development (WBCSD). Archived from the original on 24 September 2023. Retrieved 4 October 2022.*
54. ^ ***a b c d e f*** *"Heating and cooling with a heat pump: Efficiency terminology". Natural Resources Canada. 8 September 2022. Archived from the original on 3 April 2023. Retrieved 3 April 2023.*
55. **^** Commission Regulation (EU) No 813/2013 of 2 August 2013 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for space heaters and combination heaters
56. ^ ***a b c d*** The Canadian Renewable Energy Network 'Commercial Earth Energy Systems', Figure 29 Archived 2011-05-11 at the Wayback Machine. . Retrieved December 8, 2009.
57. **^** Technical Institute of Physics and Chemistry, Chinese Academy of Sciences 'State of the Art of Air-source Heat Pump for Cold Region', Figure 5 Archived 2016-04-14 at the Wayback Machine. . Retrieved April 19, 2008.
58. ^ ***a b*** SINTEF Energy Research 'Integrated CO_2 Heat Pump Systems for Space Heating and DHW in low-energy and passive houses', J. Steen, Table 3.1, Table 3.3 Archived 2009-03-18 at the Wayback Machine. . Retrieved April 19, 2008.
59. **^** *"How Wind Can Help Us Breathe Easier". Energy.gov. Archived from the original on 28 August 2023. Retrieved 13 September 2023.*
60. **^** *"Global Electricity Review 2023". Ember. 11 April 2023. Archived from the original on 11 April 2023. Retrieved 13 September 2023.*
61. ^ ***a b*** Quaschning 2022
62. **^** *"The UK is sabotaging its own plan to decarbonize heating". Engadget. 27 May 2021. Archived from the original on 6 June 2021. Retrieved 6 June 2021.*
63. **^** *Deetjen, Thomas A; Walsh, Liam; Vaishnav, Parth (28 July 2021). "US residential heat pumps: the private economic potential and its emissions, health, and grid impacts". Environmental Research Letters.* ***16*** *(8): 084024. Bibcode:2021ERL....16h4024D. doi:10.1088/1748-9326/ac10dc. S2CID 236486619.*
64. **^** *"Can the UK rely on hydrogen to save its gas boilers?". inews.co.uk. 21 May 2021. Archived from the original on 6 June 2021. Retrieved 6 June 2021.*
65. **^** IEA (2022), Global Hydrogen Review 2022, IEA, Paris https://www.iea.org/reports/global-hydrogen-review-2022 Archived 2023-01-10 at the Wayback Machine , License: CC BY 4.0
66. **^** Saturated vapors and saturated liquids are vapors and liquids at their saturation temperature and saturation pressure. A superheated vapor is at a temperature higher than the saturation temperature corresponding to its pressure.
67. **^** *Ludwig von Cube, Hans (1981). Heat Pump Technology. Butterworths. pp. 22–23. ISBN 0-408-00497-5. Archived from the original on 3 April 2023. Retrieved 2 January 2023.*
68. **^** *Chamoun, Marwan; Rulliere, Romuald; Haberschill, Philippe; Berail, Jean Francois (1 June 2012). "Dynamic model of an industrial heat pump using water*

*as refrigerant". International Journal of Refrigeration. **35** (4): 1080–1091. doi:10.1016/j.ijrefrig.2011.12.007. ISSN 0140-7007.*

69. **^** *Wu, Di (2021). "Vapor compression heat pumps with pure Low-GWP refrigerants". Renewable and Sustainable Energy Reviews. **138**: 110571. doi:10.1016/j.rser.2020.110571. ISSN 1364-0321. S2CID 229455137. Archived from the original on 24 September 2023. Retrieved 17 November 2022.*
70. **^** *"Everything you need to know about the wild world of heat pumps". MIT Technology Review. Archived from the original on 1 August 2023. Retrieved 19 September 2023.*
71. **^** *Miara, Marek (22 October 2019). "Heat Pumps with Climate-Friendly Refrigerant Developed for Indoor Installation". Fraunhofer ISE. Archived from the original on 20 February 2022. Retrieved 21 February 2022.*
72. **^** *Rabe, Barry G. (23 September 2022). "Pivoting from global climate laggard to leader: Kigali and American HFC policy". Brookings. Archived from the original on 4 October 2022. Retrieved 4 October 2022.*
73. **^** *Itteilag, Richard L. (9 August 2012). Green Electricity and Global Warming. AuthorHouse. p. 77. ISBN 9781477217405. Archived from the original on 23 November 2021. Retrieved 1 November 2020.*
74. ^ ***a b*** *"Propane-powered heat pumps are greener". The Economist. 6 September 2023. ISSN 0013-0613. Archived from the original on 17 September 2023. Retrieved 17 September 2023.*
75. **^** *"Smart CO2 Heat Pump". www.dti.dk. Archived from the original on 30 January 2023. Retrieved 17 September 2023.*
76. **^** *"Annex 53 Advanced Cooling/Refrigeration Technologies 2 page summary". HPT – Heat Pumping Technologies. Retrieved 19 February 2024.*
77. **^** *"Handbook for the Montreal Protocol on Substances that Deplete the Ozone Layer – 7th Edition". United Nations Environment Programme – Ozone Secretariat. 2007. Archived from the original on 30 May 2016. Retrieved 18 December 2016.*
78. **^** *"Refrigerants – Environmental Properties". The Engineering ToolBox. Archived from the original on 14 March 2013. Retrieved 12 September 2016.*
79. **^** R-410A#Environmental effects.
80. **^** *Ecometrica.com (27 June 2012). "Calculation of green house gas potential of R-410A". Archived from the original on 13 July 2015. Retrieved 13 July 2015.*
81. **^** *"R404 and DME Refrigerant blend as a new solution to limit global warming potential" (PDF). 14 March 2012. Archived from the original (PDF) on 14 March 2012.*
82. ^ ***a b*** IPCC_AR6_WG1_Ch7 2021, 7SM-26
83. **^** *LearnMetrics (12 May 2023). "List of Low GWP Refrigerants: 69 Refrigerants Below 500 GWP". LearnMetrics. Archived from the original on 10 June 2023. Retrieved 13 September 2023.*
84. ^ ***a b c*** *"Global warming potential (GWP) of HFC refrigerants". iifiir.org. Archived from the original on 24 September 2023. Retrieved 13 September 2023.*

85. **^** *Everitt, Neil (15 September 2023). "Qvantum plant has 1 million heat pump capacity". Cooling Post. Archived from the original on 24 September 2023. Retrieved 17 September 2023.*
86. **^** *Miara, Marek (22 October 2019). "Heat Pumps with Climate-Friendly Refrigerant Developed for Indoor Installation". Fraunhofer ISE. Archived from the original on 20 February 2022. Retrieved 21 February 2022.*
87. **^** *"Refrigerant Safety – About Refrigerant Safety, Toxicity and Flammability". Checkmark. Retrieved 17 April 2024.*
88. **^** *"A2L – Mildly Flammable Refrigerants". ACR Journal. 1 September 2015. Retrieved 17 April 2024.*
89. **^** *US Environmental Protection Agency, OAR (14 November 2014). "Phaseout of Ozone-Depleting Substances (ODS)". US EPA. Archived from the original on 24 September 2015. Retrieved 16 February 2020.*
90. **^** *"Heat Pumps". IEA. Archived from the original on 17 September 2023. Retrieved 17 September 2023.*
91. **^** *"Electrifying industrial processes with heat pumps". 22 March 2022. Archived from the original on 8 August 2022. Retrieved 9 August 2022.*
92. **^** *Department of Energy, Environment and Climate Action, Victoria Government (Australia) (11 October 2023). "Hot water systems for businesses". Victoria Government.*
93. **^** *Department of Energy, Environment and Climate Action (Australia), Victoria Government (23 September 2023). "Hot water systems for households". Victoria Government.*
94. **^** *New South Wales Climate and Energy Action, New South Wales Government (Australia) (8 December 2023). "Upgrade your hot water system". NSW Government.*
95. **^** *Australian Government, Queensland (5 October 2023). "Queensland Business Energy Saving and Transformation Rebates". Queensland Government.*
96. **^** *Time To Save (21 November 2023). "Hot Water Rebates in Australia: A Detailed Guide For Businesses". Timetosave.*
97. **^** *"Canada Greener Homes Grant". 17 March 2021. Archived from the original on 17 January 2022. Retrieved 17 January 2022.*
98. **^** *"Coal fired boiler replacement in Beijing rural area". Archived from the original on 24 March 2023. Retrieved 14 September 2023.*
99. ^ ***a b c*** *"Executive summary – The Future of Heat Pumps in China – Analysis". IEA. Retrieved 12 April 2024.*
100. **^** IEA (2024), The Future of Heat Pumps in China, IEA, Paris https://www.iea.org/reports/the-future-of-heat-pumps-in-china, Licence: CC BY 4.0
101. **^** *"The Heat Pump Accelerator Platform". European Commission. 2024. Retrieved 27 November 2024.*
102. **^** *"Heat pumps". European Commission. 2024. Retrieved 27 November 2024.*

103. **^** *"HMCR rates for goods and services". 11 July 2022. Archived from the original on 22 July 2022. Retrieved 24 August 2022.*
104. **^** *"Apply for the Boiler Upgrade Scheme". Archived from the original on 19 September 2023. Retrieved 14 September 2023.*
105. **^** *"BBC Radio 4 – Sliced Bread, Air Source Heat Pumps". BBC. Archived from the original on 30 April 2022. Retrieved 30 April 2022.*
106. **^** *Lawrence, Karen (3 May 2024). "Air source heat pump costs and savings". Which?. Retrieved 7 June 2024.*
107. **^** *"Clean Heat without the Hot Air: British and Dutch lessons and challenges". UKERC. Retrieved 7 June 2024.*
108. **^** *Shao, Elena. "H. R. 5376 – Inflation Reduction Act of 2022". Congress.gov. U.S. Congress. Archived from the original on 17 November 2022. Retrieved 17 November 2022.*
109. **^** *"As Heat Pumps Go Mainstream, a Big Question: Can They Handle Real Cold?". The New York Times. 22 February 2023. Archived from the original on 11 April 2023. Retrieved 11 April 2023.*
110. **^** *Frazin, Rachel (17 November 2023). "Biden administration uses wartime authority to bolster energy efficient manufacturing". The Hill. Retrieved 29 November 2023.*

Sources

[edit]

IPCC reports

[edit]

- *IPCC (2021). Masson-Delmotte, V.; Zhai, P.; Pirani, A.; Connors, S. L.; et al. (eds.). Climate Change 2021: The Physical Science Basis (PDF). Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press (In Press).*
    - *Forster, P.; Storelvmo, T.; Armour, K.; Collins, W. (2021). "Chapter 7: The Earth's energy budget, climate feedbacks, and climate sensitivity Supplementary Material" (PDF). IPCC AR6 WG1 2021.*
- *IPCC (2018). Masson-Delmotte, V.; Zhai, P.; Pörtner, H.-O.; Roberts, D.; et al. (eds.). Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty (PDF). Intergovernmental Panel on Climate Change.* https://www.ipcc.ch/sr15/.
    - *Rogelj, J.; Shindell, D.; Jiang, K.; Fifta, S.; et al. (2018). "Chapter 2: Mitigation Pathways Compatible with 1.5°C in the Context of Sustainable*

Development" (PDF). IPCC SR15 2018. pp. 93–174.
- *IPCC (2022). Shula, P. R.; Skea, J.; Slade, R.; Al Khourdajie, A.; et al. (eds.). Climate Change 2022: Mitigation of Climate Change (PDF). Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge, UK and New York, New York, USA: Cambridge University Press (In Press). Archived from the original (PDF) on 4 April 2022. Retrieved 10 May 2022.*
  - *IPCC (2022). "Industry" (PDF). IPCC AR6 WG3 2022.*

Other

[edit]

- *Quaschning, Volker. "Specific Carbon Dioxide Emissions of Various Fuels". Retrieved 22 February 2022.*

External links

[edit]

- Image not found or type unknown Media related to Heat pumps at Wikimedia Commons

- v
- t
- e

Heating, ventilation, and air conditioning

Fundamental concepts	○ Air changes per hour ○ Bake-out ○ Building envelope ○ Convection ○ Dilution ○ Domestic energy consumption ○ Enthalpy ○ Fluid dynamics ○ Gas compressor ○ Heat pump and refrigeration cycle ○ Heat transfer ○ Humidity ○ Infiltration ○ Latent heat ○ Noise control ○ Outgassing ○ Particulates ○ Psychrometrics ○ Sensible heat ○ Stack effect ○ Thermal comfort ○ Thermal destratification ○ Thermal mass ○ Thermodynamics ○ Vapour pressure of water

Technology

- Absorption-compression heat pump
- Absorption refrigerator
- Air barrier
- Air conditioning
- Antifreeze
- Automobile air conditioning
- Autonomous building
- Building insulation materials
- Central heating
- Central solar heating
- Chilled beam
- Chilled water
- Constant air volume (CAV)
- Coolant
- Cross ventilation
- Dedicated outdoor air system (DOAS)
- Deep water source cooling
- Demand controlled ventilation (DCV)
- Displacement ventilation
- District cooling
- District heating
- Electric heating
- Energy recovery ventilation (ERV)
- Firestop
- Forced-air
- Forced-air gas
- Free cooling
- Heat recovery ventilation (HRV)
- Hybrid heat
- Hydronics
- Ice storage air conditioning
- Kitchen ventilation
- Mixed-mode ventilation
- Microgeneration
- Passive cooling
- Passive daytime radiative cooling
- Passive house
- Passive ventilation
- Radiant heating and cooling
- Radiant cooling
- Radiant heating
- Radon mitigation
- Refrigeration
- Renewable heat
- Room air distribution
- Solar air heat
- Solar combisystem
- Solar cooling

- Air conditioner inverter
- Air door
- Air filter
- Air handler
- Air ionizer
- Air-mixing plenum
- Air purifier
- Air source heat pump
- Attic fan
- Automatic balancing valve
- Back boiler
- Barrier pipe
- Blast damper
- Boiler
- Centrifugal fan
- Ceramic heater
- Chiller
- Condensate pump
- Condenser
- Condensing boiler
- Convection heater
- Compressor
- Cooling tower
- Damper
- Dehumidifier
- Duct
- Economizer
- Electrostatic precipitator
- Evaporative cooler
- Evaporator
- Exhaust hood
- Expansion tank
- Fan
- Fan coil unit
- Fan filter unit
- Fan heater
- Fire damper
- Fireplace
- Fireplace insert
- Freeze stat
- Flue
- Freon
- Fume hood
- Furnace
- Gas compressor
- Gas heater
- Gasoline heater
- Grease duct

Measurement and control	○ Air flow meter ○ Aquastat ○ BACnet ○ Blower door ○ Building automation ○ Carbon dioxide sensor ○ Clean air delivery rate (CADR) ○ Control valve ○ Gas detector ○ Home energy monitor ○ Humidistat ○ HVAC control system ○ Infrared thermometer ○ Intelligent buildings ○ LonWorks ○ Minimum efficiency reporting value (MERV) ○ Normal temperature and pressure (NTP) ○ OpenTherm ○ Programmable communicating thermostat ○ Programmable thermostat ○ Psychrometrics ○ Room temperature ○ Smart thermostat ○ Standard temperature and pressure (STP) ○ Thermographic camera ○ Thermostat ○ Thermostatic radiator valve
Professions, trades, and services	○ Architectural acoustics ○ Architectural engineering ○ Architectural technologist ○ Building services engineering ○ Building information modeling (BIM) ○ Deep energy retrofit ○ Duct cleaning ○ Duct leakage testing ○ Environmental engineering ○ Hydronic balancing ○ Kitchen exhaust cleaning ○ Mechanical engineering ○ Mechanical, electrical, and plumbing ○ Mold growth, assessment, and remediation ○ Refrigerant reclamation ○ Testing, adjusting, balancing

Industry organizations	○ AHRI ○ AMCA ○ ASHRAE ○ ASTM International ○ BRE ○ BSRIA ○ CIBSE ○ Institute of Refrigeration ○ IIR ○ LEED ○ SMACNA ○ UMC
Health and safety	○ Indoor air quality (IAQ) ○ Passive smoking ○ Sick building syndrome (SBS) ○ Volatile organic compound (VOC)
See also	○ ASHRAE Handbook ○ Building science ○ Fireproofing ○ Glossary of HVAC terms ○ Warm Spaces ○ World Refrigeration Day ○ Template:Home automation ○ Template:Solar energy
Authority control databases: National Image not found or type unknown **Edit this at Wikidata**	○ Germany ○ United States ○ France ○ BnF data ○ Japan ○ Czech Republic ○ Israel

About Oklahoma City

For other uses, see Oklahoma City (disambiguation).

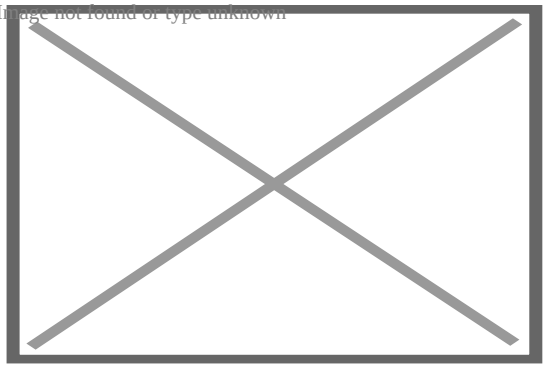
Oklahoma City is located in the United States

Image not found or type unknown
Oklahoma City
Oklahoma
City
Location within the United States

Oklahoma City

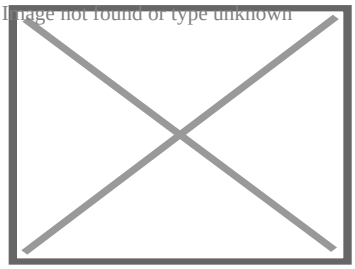
State capital city

Image not found or type unknown



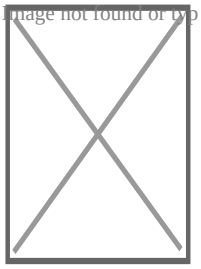
Downtown Oklahoma City

Image not found or type unknown



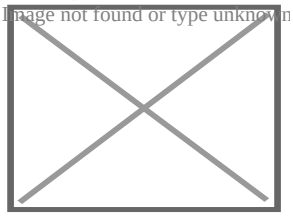
Oklahoma City Hall

Image not found or typ



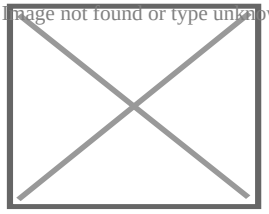
Skydance Bridge

Image not found or type unknown



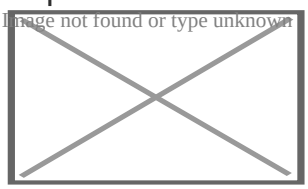
Oklahoma City National Memorial

Image not found or type unkno



Oklahoma State Capitol

Image not found or type unknown



Paycom Center

Image not found or type unk

Flag of Oklahoma City

Image not found or type unknown
Flag
Official seal of Oklahoma City

Image not found or type unknown
Seal

Nickname(s):
"OKC", "The 405", "Oklas", "Boomtown", "The Big Friendly",[1] "The City",[2]

Map

Image not found or type unknown
Interactive map of Oklahoma City

Oklahoma City is located in Oklahoma

Image not found or type unknown
Image not found or type unknown
Oklahoma City
Oklahoma
City
Location within the state of
Oklahoma

Coordinates: 35°28?7?N 97°31?17?W
ÃƒÆ’Ã†â€™Ãƒâ€šÃ‚Â¯ÃƒÆ’Ã¢â‚¬Å¡Ãƒâ€šÃ‚Â»ÃƒÆ’Ã¢â‚¬Å¡Ãƒâ€šÃ‚¿ /
ÃƒÆ’Ã†â€™Ãƒâ€šÃ‚Â¯ÃƒÆ’Ã¢â‚¬Å¡Ãƒâ€šÃ‚Â»ÃƒÆ’Ã¢â‚¬Å¡Ãƒâ€šÃ‚¿35.46861°N
97.52139°WCountryUnited StatesStateOklahomaCounties

- Oklahoma
- Canadian
- Cleveland
- Pottawatomie

FoundedApril 22, 1889[3]IncorporatedJuly 15, 1890[3]Government

• TypeCouncil–manager • BodyOklahoma City Council • MayorDavid Holt (R) • City managerCraig FreemanArea

[4]
• City

620.79 sq mi (1,607.83 km^2) • Land606.48 sq mi (1,570.77 km^2) • Water14.31 sq mi (37.06 km^2) • Urban

421.73 sq mi (1,092.3 km^2)Elevation

[5]

1,198 ft (365 m)Population

(2020)
• City

681,054 • Increase • Rank62nd in North America
20th in the United States
1st in Oklahoma • Density1,122.96/sq mi (433.58/km^2) • Urban

982,276 (US: 46th) • Urban density2,329.2/sq mi (899.3/km^2) • Metro

[6]

1,441,695 (US: 42nd)

- Oklahoma Cityan
- Oklahoma Citian

Demonyms
GDP

[7]

• Metro$100.054 billion (2023)Time zoneUTC?6 (Central (CST)) • Summer (DST) UTC?5 (CDT)ZIP Codes

Zip codes[8]

Area code(s)405/572FIPS code40-55000GNIS feature ID1102140[5]Websitewww.okc.gov

Oklahoma City (/ ÃƒÆ’Ã†â€™ÃƒÂ¢Ã¢â€šÂ¬Ã‚Â¹ÃƒÆ’Ã¢â‚¬Â¦ÃƒÂ¢Ã¢â€šÂ¬Ã¢â€žÂ¢ oÃƒÆ’Ã†â€™Ãƒâ€¦Ã‚Â ÃƒÆ’Ã¢â‚¬Â¦Ãƒâ€šÃ‚Â kl ÃƒÆ’Ã†â€™ÃƒÂ¢Ã¢â€šÂ¬Ã‚Â°ÃƒÆ’Ã‚Â¢ÃƒÂ¢Ã¢â€šÂ¬Ã…Â¾Ãƒâ€šÃ‚Â¢ ÃƒÆ’Ã†â€™ÃƒÂ¢Ã¢â€šÂ¬Ã‚Â¹ÃƒÆ’Ã¢â‚¬Â¦Ã‚Â¹ÃƒÂ¢Ã¢â€šÂ¬Ã‚Â h oÃƒÆ’Ã†â€™Ãƒâ€¦Ã‚Â ÃƒÆ’Ã¢â‚¬Â¦Ãƒâ€šÃ‚Â m ÃƒÆ’Ã†â€™ÃƒÂ¢Ã¢â€šÂ¬Ã‚Â°ÃƒÆ’Ã‚Â¢ÃƒÂ¢Ã¢â€šÂ¬Ã…Â¾Ãƒâ€šÃ‚Â¢ -/ ÃƒÆ’Ã†â€™Ãƒâ€šÃ‚Â¢ÃƒÆ’Ã‚Â¢Ã‚Â€Ã‚Â¢Ã¢â‚¬Å¡Ã‚Â¬Ã‚Â¦Ã¢â‚¬Å“ÃƒÆ’Ã¢â‚¬Â¦Ã‚Â¹Ã¢â‚¬Å“

), officially the **City of Oklahoma City**, and often shortened to **OKC**, is the capital and most populous city of the U.S. state of Oklahoma. The county seat of Oklahoma County,[9] its population ranks 20th among United States cities and 8th in the Southern United States. The population grew following the 2010 census and reached 681,054 in the 2020 census.[10] The Oklahoma City metropolitan area had a population of 1,396,445,[11] and the Oklahoma City–Shawnee Combined Statistical Area had a population of 1,469,124,[11] making it Oklahoma's largest municipality and metropolitan area by population.

Oklahoma City's city limits extend somewhat into Canadian, Cleveland, and Pottawatomie counties. However, much of those areas outside the core Oklahoma County area are suburban tracts or protected rural zones (watershed). The city is the eighth-largest in the United States by area including consolidated city-counties; it is the second-largest, after Houston, not including consolidated cities. The city is also the second-largest by area among state capital cities in the United States, after Juneau, Alaska.

Oklahoma City has one of the world's largest livestock markets.[12] Oil, natural gas, petroleum products, and related industries are its economy's largest sector. The city is in the middle of an active oil field, and oil derricks dot the capitol grounds. The federal government employs a large number of workers at Tinker Air Force Base and the United States Department of Transportation's Mike Monroney Aeronautical Center

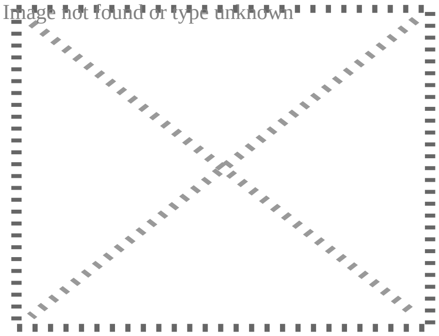
(which house offices of the Federal Aviation Administration and the Transportation Department's Enterprise Service Center, respectively).

Oklahoma City is on the I-35 and I-40 corridors, one of the primary travel corridors south into neighboring Texas and New Mexico, north towards Wichita and Kansas City, west to Albuquerque, and east towards Little Rock and Memphis. Located in the state's Frontier Country region, the city's northeast section lies in an ecological region known as the Cross Timbers. The city was founded during the Land Run of 1889 and grew to a population of over 10,000 within hours of its founding. It was the site of the April 19, 1995, bombing of the Alfred P. Murrah Federal Building, in which 167 people died,[13] the deadliest terror attack in U.S. history until the attacks of September 11, 2001, and the deadliest act of domestic terrorism in U.S. history.

Since weather records have been kept beginning in 1890, Oklahoma City has been struck by 14 violent tornadoes, 11 of which were rated F4 or EF4 on the Fujita and Enhanced Fujita scales, and two rated F5 and EF5.[14]

History

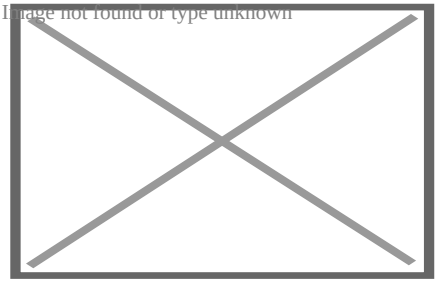
[edit]
Main article: History of Oklahoma City
For a chronological guide, see Timeline of Oklahoma City.



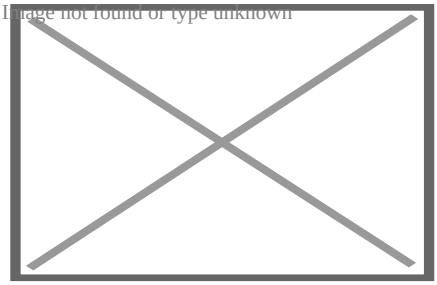
Map of Indian Territory (Oklahoma) 1889, showing Oklahoma as a train stop on a railroad line. Britannica 9th ed.

ÃƒÆ’Ã†â€™Ãƒâ€šÃ‚Â¡ÃƒÆ’Ã¢â‚¬Â¦Ãƒâ€šÃ‚Â½ÃƒÆ’Ã¢â‚¬Å¡Ãƒâ€šÃ‚Â£ÃƒÆ’Ã†â€™Ãƒâ
ÃƒÆ’Ã†â€™Ãƒâ€šÃ‚Â¡ÃƒÆ’Ã¢â‚¬Â¦Ãƒâ€šÃ‚Â½ÃƒÆ’

Oklahoma City was settled on April 22, 1889,[17] when the area known as the "Unassigned Lands" was opened for settlement in an event known as "The Land Run".[18] On April 26 of that year, its first mayor was elected, William Couch. Some 10,000 homesteaders settled in the area that would become the capital of Oklahoma. The town grew quickly; the population doubled between 1890 and 1900.[19] Early leaders of the development of the city included Anton H. Classen, John Wilford Shartel, Henry Overholser, Oscar Ameringer, Jack C. Walton, Angelo C. Scott, and James W. Maney.



Lithograph of Oklahoma City from 1890.



Looking north on Broadway from present-day Sheridan Ave, 1910.

By the time Oklahoma was admitted to the Union in 1907, Oklahoma City had surpassed Guthrie, the territorial capital, as the new state's population center and commercial hub. Soon after, the capital was moved from Guthrie to Oklahoma City.[20] Oklahoma City was a significant stop on Route 66 during the early part of the 20th century; it was prominently mentioned in Bobby Troup's 1946 jazz song "(Get Your Kicks on) Route 66" made famous by artist Nat King Cole.

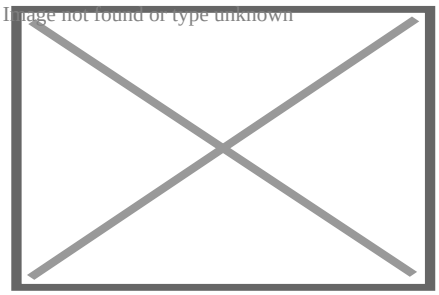
Before World War II, Oklahoma City developed significant stockyards, attracting jobs and revenue formerly in Chicago and Omaha, Nebraska. With the 1928 discovery of oil

within the city limits (including under the State Capitol), Oklahoma City became a major center of oil production.[21] Post-war growth accompanied the construction of the Interstate Highway System, which made Oklahoma City a major interchange as the convergence of I-35, I-40, and I-44. It was also aided by the federal development of Tinker Air Force Base after successful lobbying efforts by the director of the Chamber of Commerce Stanley Draper.

In 1950, the Census Bureau reported the city's population as 8.6% black and 90.7% white.[22]

In 1959, the city government launched a "Great Annexation Drive" that expanded the city's area from 80 to 475.55 square miles (207.2 to 1,231.7 square kilometers) by the end of 1961, making it the largest U.S. city by land mass at the time.[23]

Patience Latting was elected Mayor of Oklahoma City in 1971, becoming the city's first female mayor.[24] Latting was also the first woman to serve as mayor of a U.S. city with over 350,000 residents.[24]



Oklahoma City National Memorial at Christmas.

Like many other American cities, the center city population declined in the 1970s and 1980s as families followed newly constructed highways to move to newer housing in nearby suburbs. Urban renewal projects in the 1970s, including the Pei Plan, removed older structures but failed to spark much new development, leaving the city dotted with vacant lots used for parking. A notable exception was the city's construction of the Myriad Gardens and Crystal Bridge, a botanical garden and modernistic conservatory in the heart of downtown. Architecturally significant historic buildings lost to clearances were the Criterion Theater,[25][26] the Baum Building,[27] the Hales Building,[28][29] and the Biltmore Hotel.[30]

In 1993, the city passed a massive redevelopment package known as the Metropolitan Area Projects (MAPS), intended to rebuild the city's core with civic projects to establish more activities and life in downtown. The city added a new baseball park; a central library; renovations to the civic center, convention center, and fairgrounds; and a water canal in the Bricktown entertainment district. Water taxis transport passengers within the district, adding color and activity along the canal. MAPS has become one of the

most successful public-private partnerships undertaken in the U.S., exceeding $3 billion in private investment as of 2010.[31] As a result of MAPS, the population in downtown housing has exponentially increased, with the demand for additional residential and retail amenities, such as groceries, services, and shops.

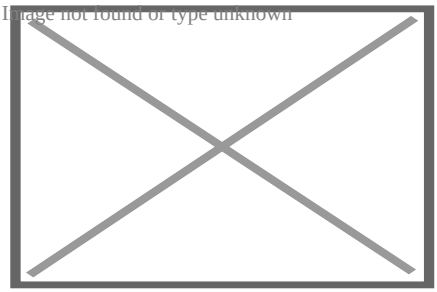
Since the completion of the MAPS projects, the downtown area has seen continued development. Several downtown buildings are undergoing renovation/restoration. Notable among these was the restoration of the Skirvin Hotel in 2007. The famed First National Center is also being renovated.

Residents of Oklahoma City suffered substantial losses on April 19, 1995, when Timothy McVeigh detonated a bomb in front of the Murrah building. The building was destroyed (the remnants of which had to be imploded in a controlled demolition later that year), more than 100 nearby buildings suffered severe damage, and 168 people were killed.[32] The site has been commemorated as the Oklahoma City National Memorial and Museum.[33] Since its opening in 2000, over three million people have visited. Every year on April 19, survivors, families, and friends return to the memorial to read the names of each person lost. McVeigh was executed by lethal injection on June 11, 2001.

The "Core-to-Shore" project was created to relocate I-40 one mile (1.6 km) south and replace it with a boulevard to create a landscaped entrance to the city.[34] This also allows the central portion of the city to expand south and connect with the shore of the Oklahoma River. Several elements of "Core to Shore" were included in the MAPS 3 proposal approved by voters in late 2009.

Geography

[edit]



Mid-May 2006 photograph of Oklahoma City taken from the International Space Station (ISS)

Oklahoma City lies along one of the primary corridors into Texas and Mexico and is a three-hour drive from the Dallas-Fort Worth metroplex. The city is in the Frontier Country region in the state's center, making it ideal for state government.

According to the United States Census Bureau, the city has a total area of 620.34 square miles (1,606.7 km^2),[35] of which 601.11 square miles (1,556.9 km^2) is land and 19.23 square miles (49.8 km^2) is water.

Oklahoma City lies in the Sandstone Hills region of Oklahoma, known for hills of 250 to 400 feet (80 to 120 m) and two species of oak: blackjack oak (*Quercus marilandica*) and post oak (*Q. stellata*).[36] The northeastern part of the city and its eastern suburbs fall into an ecological region known as the Cross Timbers.[37]

The city is roughly bisected by the North Canadian River (recently renamed the Oklahoma River inside city limits). The North Canadian once had sufficient flow to flood every year, wreaking destruction on surrounding areas, including the central business district and the original Oklahoma City Zoo.[38] In the 1940s, a dam was built on the river to manage the flood control and reduce its level.[39] In the 1990s, as part of the citywide revitalization project known as MAPS, the city built a series of low-water dams, returning water to the portion of the river flowing near downtown.[40] The city has three large lakes: Lake Hefner and Lake Overholser, in the northwestern quarter of the city; and the largest, Lake Stanley Draper, in the city's sparsely populated far southeast portion.

The population density typically reported for Oklahoma City using the area of its city limits can be misleading. Its urbanized zone covers roughly 244 square miles (630 km^2) resulting in a 2013 estimated density of 2,500 per square mile (970/km^2), compared with larger rural watershed areas incorporated by the city, which cover the remaining 377 sq mi (980 km^2) of the city limits.[41]

Oklahoma City is one of the largest cities in the nation in compliance with the Clean Air Act.[42]

Tallest buildings

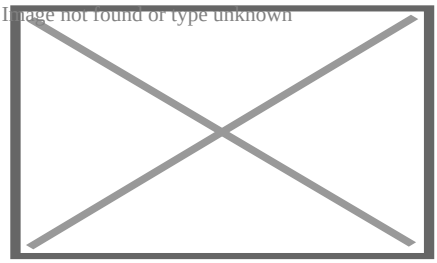
[edit]
Main article: List of tallest buildings in Oklahoma City

Rank	Building	Height	Floors	Built	Ref.
1	Devon Energy Center	844 feet (257 m)	50	2012	[43]
2	BancFirst Tower	500 feet (152 m)	36	1971	[44]
3	First National Center	446 feet (136 m)	33	1931	[45]
4	BOK Park Plaza	433 feet (132 m)	27	2017	[46]
5	Oklahoma Tower	410 feet (125 m)	31	1982	[47]
6	Strata Tower	393 feet (120 m)	30	1973	[48]
7	City Place	391 feet (119 m)	33	1931	[49]
8	Valliance Bank Tower	321 feet (98 m)	22	1984	[50]

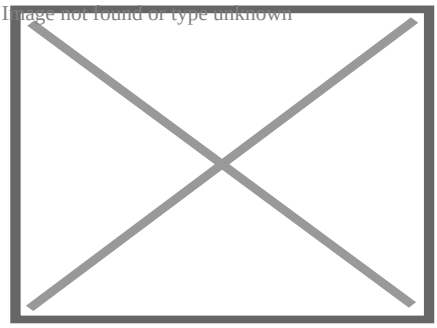
9	Leadership Square North	285 feet (87 m)	22	1984 [51]
10	Arvest Tower	281 feet (86 m)	16	1972 [52]

Neighborhoods

[edit]
Main article: Neighborhoods of Oklahoma City



Automobile Alley in Oklahoma City



Looking up in the heart of Oklahoma City's Central Business District

Oklahoma City neighborhoods are highly varied, with affluent historic neighborhoods located next to districts that have not wholly recovered from the economic and social decline of the 1970s and 1980s.[*citation needed*]

The city is bisected geographically and culturally by the North Canadian River, which divides North Oklahoma City and South Oklahoma City. The north side is characterized by diverse and fashionable urban neighborhoods near the city center and sprawling suburbs further north. South Oklahoma City is generally more blue-collar working class and significantly more industrial, having grown up around the Stockyards and meat packing plants at the turn of the century. It is also the center of the city's rapidly growing Latino community.

Downtown Oklahoma City, which has 7,600 residents, is seeing an influx of new private investment and large-scale public works projects, which have helped to revitalize a central business district left almost deserted by the Oil Bust of the early 1980s. The centerpiece of downtown is the newly renovated Crystal Bridge and Myriad Botanical Gardens, one of the few elements of the Pei Plan to be completed. In 2021,

a massive new central park will link the gardens near the CBD and the new convention center to be built just south of it to the North Canadian River as part of a massive works project known as "Core to Shore"; the new park is part of MAPS3, a collection of civic projects funded by a one-cent temporary (seven-year) sales tax increase.[53]

Climate

[edit]
Main article: Climate of Oklahoma City

Oklahoma City has a temperate humid subtropical climate (Köppen: *Cfa*, Trewartha: *Cfak*), along with significant continental influences. The city features hot, humid summers and cool winters. Prolonged and severe droughts (sometimes leading to wildfires in the vicinity) and hefty rainfall leading to flash flooding and flooding occur regularly. Consistent winds, usually from the south or south-southeast during the summer, help temper the hotter weather. Consistent northerly winds during the winter can intensify cold periods. Severe ice storms and snowstorms happen sporadically during the winter.

The average temperature is 61.4 °F (16.3 °C), with the monthly daily average ranging from 39.2 °F (4.0 °C) in January to 83.0 °F (28.3 °C) in July. Extremes range from ?17 °F (?27 °C) on February 12, 1899 to 113 °F (45 °C) on August 11, 1936, and August 3, 2012;[54] The last sub-zero (Fahrenheit) reading was ?14 °F (?26 °C) on February 16, 2021.[55][56] Temperatures reach 100 °F (38 °C) on 10.4 days of the year, 90 °F (32 °C) on nearly 70 days, and fail to rise above freezing on 8.3 days.[55] The city receives about 35.9 inches (91.2 cm) of precipitation annually, of which 8.6 inches (21.8 cm) is snow.

The report "Regional Climate Trends and Scenarios for the U.S. National Climate Assessment" (NCA) from 2013 by NOAA projects that parts of the Great Plains region can expect up to 30% (high emissions scenario based on CMIP3 and NARCCAP models) increase in extreme precipitation days by mid-century. This definition is based on days receiving more than one inch of rainfall.[57]

Extreme weather

[edit]

Oklahoma City has an active severe weather season from March through June, especially during April and May. Being in the center of what is colloquially referred to as Tornado Alley, it is prone to widespread and severe tornadoes, as well as severe hailstorms and occasional derechoes. Tornadoes occur every month of the year, and a

secondary smaller peak also occurs during autumn, especially in October. The Oklahoma City metropolitan area is one of the most tornado-prone major cities in the world, with about 150 tornadoes striking within the city limits since 1890. Since the time weather records have been kept, Oklahoma City has been struck by 13 violent tornadoes, eleven rated F/EF4 and two rated F/EF5.[14]

On May 3, 1999, parts of Oklahoma City and surrounding communities were impacted by a tornado. It was the last U.S. tornado to be given a rating of F5 on the Fujita scale before the Enhanced Fujita scale replaced it in 2007. While the tornado was in the vicinity of Bridge Creek to the southwest, wind speeds of 318 mph (510 km/h) were estimated by a mobile Doppler radar, the highest wind speeds ever recorded on Earth.[58] A second top-of-the-scale tornado occurred on May 20, 2013; South Oklahoma City, along with Newcastle and Moore, was hit by an EF5 tornado. The tornado was 0.5 to 1.3 miles (0.80 to 2.09 km) wide and killed 23 people.[59] On May 31, less than two weeks after the May 20 event, another outbreak affected the Oklahoma City area. Within Oklahoma City, the system spawned an EF1 and an EF0 tornado, and in El Reno to the west, an EF3 tornado occurred. This lattermost tornado, which was heading in the direction of Oklahoma City before it dissipated, had a width of 2.6 miles (4.2 km), making it the widest tornado ever recorded. Additionally, winds over 295 mph (475 km/h) were measured, one of the two highest wind records for a tornado.[60]

With 19.48 inches (495 mm) of rainfall, May 2015 was Oklahoma City's record-wettest month since record-keeping began in 1890. Across Oklahoma and Texas generally, there was a record flooding in the latter part of the month.[61]

Climate data for Oklahoma City (Will Rogers World Airport), 1991?2020 normals,[a] extr 1890?present[b]

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Record high °F (°C)	83 (28)	92 (33)	97 (36)	100 (38)	104 (40)	107 (42)	110 (43)	113 (45)	108 (42)	97 (36)	87 (31)	86 (30)	
Mean maximum °F (°C)	71.7 (22.1)	77.1 (25.1)	84.2 (29.0)	86.9 (30.5)	92.3 (33.5)	96.4 (35.8)	102.4 (39.1)	101.5 (38.6)	96.2 (35.7)	88.9 (31.6)	79.1 (26.2)	71.2 (21.8)	
Mean daily maximum °F (°C)	49.3 (9.6)	53.8 (12.1)	62.9 (17.2)	71.1 (21.7)	78.9 (26.1)	87.5 (30.8)	93.1 (33.9)	92.2 (33.4)	83.9 (28.8)	72.8 (22.7)	60.7 (15.9)	50.4 (10.2)	
Daily mean °F (°C)	38.2 (3.4)	42.3 (5.7)	51.2 (10.7)	59.3 (15.2)	68.2 (20.1)	76.9 (24.9)	81.7 (27.6)	80.7 (27.1)	72.7 (22.6)	61.1 (16.2)	49.2 (9.6)	40.0 (4.4)	
Mean daily minimum °F (°C)	27.0 (?2.8)	30.8 (?0.7)	39.5 (4.2)	47.5 (8.6)	57.6 (14.2)	66.2 (19.0)	70.3 (21.3)	69.1 (20.6)	61.5 (16.4)	49.4 (9.7)	37.7 (3.2)	29.5 (?1.4)	

Mean minimum °F (°C)	11.7 (?11.3)	15.4 (?9.2)	21.5 (?5.8)	32.3 (0.2)	43.8 (6.6)	56.6 (13.7)	63.6 (17.6)	61.7 (16.5)	48.4 (9.1)	33.8 (1.0)	21.7 (?5.7)	14.3 (?9.8)	(
Record low °F (°C)	?11 (?24)	?17 (?27)	1 (?17)	20 (?7)	32 (0)	46 (8)	53 (12)	49 (9)	35 (2)	16 (?9)	9 (?13)	?8 (?22)	
Average precipitation inches (mm)	1.32 (34)	1.42 (36)	2.55 (65)	3.60 (91)	5.31 (135)	4.49 (114)	3.59 (91)	3.60 (91)	3.72 (94)	3.32 (84)	1.68 (43)	1.79 (45)	
Average snowfall inches (cm)	1.8 (4.6)	1.8 (4.6)	0.8 (2.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.5 (1.3)	1.8 (4.6)	
Average precipitation days (? 0.01 in)	5.0	5.7	6.9	7.9	10.0	8.6	6.0	6.7	7.1	7.5	5.8	5.7	
Average snowy days (? 0.1 in)	1.3	1.3	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.3	1.4	
Average relative humidity (%)	66.6	65.7	61.3	61.1	67.5	67.2	60.9	61.6	67.1	64.4	67.1	67.8	
Average dew point °F (°C)	23.7 (?4.6)	28.0 (?2.2)	35.2 (1.8)	45.1 (7.3)	55.8 (13.2)	63.7 (17.6)	65.3 (18.5)	64.4 (18.0)	59.5 (15.3)	47.7 (8.7)	37.0 (2.8)	27.5 (?2.5)	
Mean monthly sunshine hours	200.8	189.7	244.2	271.3	295.2	326.1	356.6	329.3	263.7	245.1	186.5	180.9	3
Mean daily daylight hours	10.1	10.9	12.0	13.1	14.1	14.5	14.3	13.4	12.4	11.3	10.3	9.8	
Percent possible sunshine	64	62	66	69	68	75	80	79	71	70	60	60	
Average ultraviolet index	3	4	6	8	9	10	10	9	8	5	3	2	

Source 1: NOAA (relative humidity and sun 1961?1990)[62][55][63]

Source 2: Weather Atlas(Daylight-UV) [64]

Demographics

[edit]

Population of Oklahoma City 1890-2022

Census	Pop.	Note	%±
1890	4,151		—
1900	10,037		141.8%
1910	64,205		539.7%
1920	91,295		42.2%
1930	185,389		103.1%
1940	204,424		10.3%
1950	243,504		19.1%
1960	324,253		33.2%
1970	368,164		13.5%
1980	404,014		9.7%
1990	444,719		10.1%
2000	506,132		13.8%
2010	579,999		14.6%
2020	681,054		17.4%
2024 (est.)	709,330	[65]	4.2%

U.S. Decennial Census[66]
1790-1960[67] 1900-1990[68]
1990-2000[69] 2010[70]

In the 2010 census, there were 579,999 people, 230,233 households, and 144,120 families in the city. The population density was 956.4 inhabitants per square mile (321.9/km^2). There were 256,930 housing units at an average density of 375.9 per square mile (145.1/km^2). By the 2020 census, its population grew to 681,054.[71]

Of Oklahoma City's 579,999 people in 2010, 44,541 resided in Canadian County, 63,723 lived in Cleveland County, 471,671 resided in Oklahoma County, and 64 resided in Pottawatomie County.[72]

In 2010, there were 230,233 households, 29.4% of which had children under 18 living with them, 43.4% were married couples living together, 13.9% had a female householder with no husband present, and 37.4% were non-families. One person households account for 30.5% of all households, and 8.7% of all households had someone living alone who was 65 years of age or older. The average household size was 2.47 and the average family size was 3.11.[73]

According to the American Community Survey 1-year estimates in 2022, the median income for a household in the city was $63,713, and the median income for a family was $80,833. Married-couple families $99,839, and nonfamily households $40,521.[74] The per capita income for the city was $35,902.[75] 15.5% of the population and 11.2% of families were below the poverty line. Of the total population, 20.1% of those under 18 and 10.6% of those 65 and older lived below the poverty line.[76]

In the 2000 census, Oklahoma City's age composition was 25.5% under the age of 18, 10.7% from 18 to 24, 30.8% from 25 to 44, 21.5% from 45 to 64, and 11.5% who were 65 years of age or older. The median age was 34 years. For every 100 females, there were 95.6 males. For every 100 females age 18 and over, there were 92.7 males.

Oklahoma City has experienced significant population increases since the late 1990s. It is the first city in the state to record a population greater than 600,000 residents and the first city in the Great Plains region to record a population greater than 600,000 residents. It is the largest municipal population of the Great Plains region (Oklahoma, Kansas, Nebraska, South Dakota, North Dakota).[*ambiguous*]

In the 2020 census, there were 268,035 households in the city, out of which 81,374 households (30.4%) were individuals, 113,161 (42.2%) were opposite-sex married couples, 17,699 (6.6%) were unmarried opposite-sex partnerships, and 2,930 (1.1%) were same-sex married couples or partnerships.[77]

Race and ethnicity

[edit]

Image not found or type unknown

Map of racial distribution of the Oklahoma City area, 2020 U.S. census. Each dot is one person:
ÃƒÆ’Ã†â€™Ãƒâ€šÃ‚Â¢ÃƒÆ’Ã¢â‚¬Å¡Ãƒâ€šÃ‚Â¬ÃƒÆ’Ã¢â‚¬Å¡Ãƒâ€šÃ‚Â¤
White

ÃƒÆ’Ã†â€™Ãƒâ€šÃ‚Ã¢Ã‚Ã¢â‚¬Å¡Ãƒâ€šÃ‚Â¬Ã‚Ã¢â‚¬Å¡Ãƒâ€šÃ‚Â¤ Black

ÃƒÆ’Ã†â€™Ãƒâ€šÃ‚Ã¢Ã‚Ã¢â‚¬Å¡Ãƒâ€šÃ‚Â¬Ã‚Ã¢â‚¬Å¡Ãƒâ€šÃ‚Â¤ Asian

ÃƒÆ’Ã†â€™Ãƒâ€šÃ‚Ã¢Ã‚Ã¢â‚¬Å¡Ãƒâ€šÃ‚Â¬Ã‚Ã¢â‚¬Å¡Ãƒâ€šÃ‚Â¤ Hispanic

ÃƒÆ’Ã†â€™Ãƒâ€šÃ‚Ã¢Ã‚Ã¢â‚¬Å¡Ãƒâ€šÃ‚Â¬Ã‚Ã¢â‚¬Å¡Ãƒâ€šÃ‚Â¤ Multiracial

ÃƒÆ’Ã†â€™Ãƒâ€šÃ‚Ã¢Ã‚Ã¢â‚¬Å¡Ãƒâ€šÃ‚Â¬Ã‚Ã¢â‚¬Å¡Ãƒâ€šÃ‚Â¤ Native American/Other

Historical racial composition	2020 [71]	2010[78]	1990[22]	1970[22]	1940[22]
White (Non-Hispanic)	49.5%	56.7%	72.9%	82.2%	90.4%
Hispanic or Latino	21.3%	17.2%	5.0%	2.0%	n/a
Black or African American	13.8%	14.8%	16.0%	13.7%	9.5%
Mixed	7.6%	4.0%	0.4%	–	–
Asian	4.6%	4.0%	2.4%	0.2%	–
Native American	3.4%	3.1%	4.2%	2.0%	0.1%

According to the 2020 census, the racial composition of Oklahoma City was as follows:[79] White or European American 49.5%, Hispanic or Latino 21.3%, Black or African American 13.8%, Asian 4.6%, Native American 2.8%, Native Hawaiian and Other Pacific Islander 0.2%, other race 0.4%, and two or more races (non-Hispanic) 7.6%. Its population has diversified since the 1940s census, where 90.4% was non-Hispanic white.[22] An analysis in 2017 found Oklahoma City to be the 8th least racially segregated significant city in the United States.[80] Of the 20 largest US cities, Oklahoma City has the second-highest percentage of the population reporting two or more races on the Census, 7.6%, second to 8.9% in New York City.

2020

[edit]

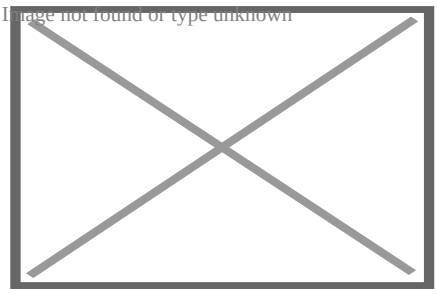
Oklahoma City – Racial and ethnic composition

Note: the US Census treats Hispanic/Latino as an ethnic category. This table excludes Latinos from the racial categories and assigns them to a separate category. Hispanics/Latinos may be of any race.

Race / Ethnicity (*NH* = *Non-Hispanic*)	Pop 2000 [81]	Pop 2010 [82]	Pop 2020 [83]	% 2000	% 2010	% 2020
White alone (NH)	327,225	328,582	337,063	64.65%	56.65%	49.49%
Black or African American alone (NH)	76,994	85,744	93,767	15.21%	14.78%	13.77%
Native American or Alaska Native alone (NH)	16,406	18,208	18,757	3.24%	3.14%	2.75%
Asian alone (NH)	17,410	23,051	31,163	3.44%	3.97%	4.58%
Pacific Islander alone (NH)	278	464	971	0.05%	0.08%	0.14%
Some Other Race alone (NH)	452	700	2,700	0.09%	0.12%	0.40%
Mixed Race or Multi-Racial (NH)	15,999	23,212	51,872	3.16%	4.00%	7.62%
Hispanic or Latino (any race)	51,368	100,038	144,761	10.15%	17.25%	21.26%
Total	**506,132**	**579,999**	**681,054**	**100.00%**	**100.00%**	**100.00%**

Metropolitan statistical area

[edit]



Old Interstate 40 Crosstown, Oklahoma City

Oklahoma City is the principal city of the eight-county Oklahoma City metropolitan statistical Area in Central Oklahoma and is the state's largest urbanized area. As of 2015, the metro area was the 41st largest in the nation based on population.[84]

Religion

[edit]

The Association of Religion Data Archives in 2020 reported that the Southern Baptist Convention was the city and metropolitan area's most prominent Christian tradition with 213,008 members, Christianity being the area's predominant religion. Non/interdenominational Protestants were the second largest tradition with 195,158 members. The Roman Catholic Church claimed 142,491 adherents throughout the metropolitan region and Pentecostals within the Assemblies of God USA numbered 48,470.[85] The remainder of Christians in the area held to predominantly Evangelical Christian beliefs in numerous evangelical Protestant denominations. Outside of Christendom, there were 4,230 practitioners of Hinduism and 2,078 Mahayana Buddhists. An estimated 8,904 residents practiced Islam during this study.[85]

Crime

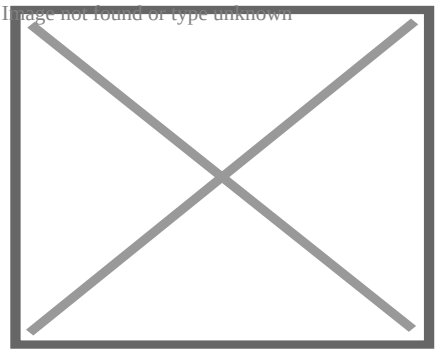
[edit]

Law enforcement claims Oklahoma City has traditionally been the territory of the notorious Juárez Cartel, but the Sinaloa Cartel has been reported as trying to establish a foothold in Oklahoma City. There are many rival gangs in Oklahoma City, one whose headquarters has been established in the city, the Southside Locos, traditionally known as Sureños.[86]

Oklahoma City also has its share of violent crimes, particularly in the 1970s. The worst occurred in 1978 when six employees of a Sirloin Stockade restaurant on the city's south side were murdered execution-style in the restaurant's freezer. An intensive investigation followed, and the three individuals involved, who also killed three others in Purcell, Oklahoma, were identified. One, Harold Stafford, died in a motorcycle accident in Tulsa not long after the restaurant murders. Another, Verna Stafford, was sentenced to life without parole after being granted a new trial after she had been sentenced to death. Roger Dale Stafford, considered the mastermind of the murder spree, was executed by lethal injection at the Oklahoma State Penitentiary in 1995.[87]

The Oklahoma City Police Department has a uniformed force of 1,169 officers and 300+ civilian employees. The department has a central police station and five substations covering 2,500 police reporting districts that average 1/4 square mile in size.

Image not found or type unknown



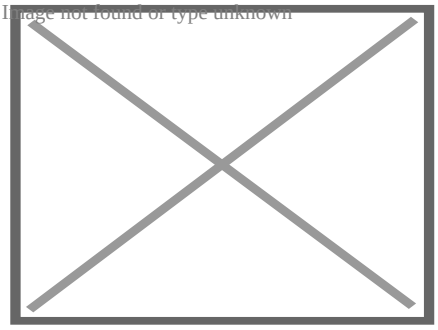
The Murrah Federal Building after the attack

On April 19, 1995, the Alfred P. Murrah Federal Building was destroyed by a fertilizer bomb manufactured and detonated by Timothy McVeigh. The blast and catastrophic collapse killed 168 people and injured over 680. The blast shock-wave destroyed or damaged 324 buildings within a 340-meter radius, destroyed or burned 86 cars, and shattered glass in 258 nearby buildings, causing at least an estimated $652 million. McVeigh was convicted and subsequently executed by lethal injection on June 11, 2001.

Economy

[edit]
See also: List of companies based in Oklahoma City

Image not found or type unknown



The Sonic Drive-In restaurant chain is headquartered in Oklahoma City.

The economy of Oklahoma City, once just a regional power center of government and energy exploration, has since diversified to include the sectors of information technology, services, health services, and administration. The city is headquarters to two Fortune 500 companies: Expand Energy and Devon Energy,[88] as well as being home to Love's Travel Stops & Country Stores, which is ranked thirteenth on Forbes' list of private companies.[89]

As of March 2024, the top 20 employers in the city were:[90]

#	Employer	# of employees

1	State of Oklahoma (State Capital)	37,600
2	Tinker Air Force Base	26,000
3	Oklahoma State University-Stillwater	13,940
4	University of Oklahoma-Norman	11,530
5	Integris Health	11,000
6	Amazon	8,000
7	Hobby Lobby Stores (HQ)	6,500
8	Mercy Health Center (HQ)	6,500
9	SSM Health Care (Regional HQ)	5,600
10	FAA Mike Monroney Aeronautical Center	5,150
11	University of Oklahoma Health Sciences Center	5000
12	City of Oklahoma City	4,500
13	OU Medical Center	4,360
14	Paycom (HQ)	4,200
15	The Boeing Company	3,740
16	Midfirst Bank (HQ)	3,100
17	Norman Regional Hospital	2,740
18	AT&T	2,700
19	OGE Energy Corp (HQ)	2,240
20	Dell	2,100

Other major corporations with a significant presence (over 1,000 employees) in the city of Oklahoma City include the United Parcel Service, Farmers Insurance Group, Great Plains Coca-Cola Bottling Company, Deaconess Hospital, Johnson Controls, MidFirst Bank, Rose State College, and Continental Resources.[91][92]

While not in the city limits, other large employers within the Oklahoma City MSA include United States Air Force – Tinker AFB (27,000); University of Oklahoma (11,900); University of Central Oklahoma (2,900); and Norman Regional Hospital (2,800).[91]

According to the Oklahoma City Chamber of Commerce, the metropolitan area's economic output grew by 33% between 2001 and 2005 due chiefly to economic diversification. Its gross metropolitan product (GMP) was $43.1 billion in 2005[93] and grew to $61.1 billion in 2009.[94] By 2016 the GMP had grown to $73.8 billion.[95]

In 2008, *Forbes* magazine reported that the city had falling unemployment, one of the strongest housing markets in the country and solid growth in energy, agriculture, and manufacturing.[96] However, during the early 1980s, Oklahoma City had one of the

worst job and housing markets due to the bankruptcy of Penn Square Bank in 1982 and then the post-1985 crash in oil prices (oil bust).[*citation needed*]

Tourism

[edit]

Approximately 23.2 million visitors contributed $4.3 billion to Oklahoma City's economy. These visitors directly spent $2.6 billion, sustained nearly 34,000 jobs, and generated $343 million in state and local taxes.[97]

Business districts

[edit]
See also: Neighborhoods of Oklahoma City

Business and entertainment districts (and, to a lesser extent, local neighborhoods) tend to maintain their boundaries and character by applying zoning regulations and business improvement districts (districts where property owners agree to a property tax surcharge to support additional services for the community).[98] Through zoning regulations, historic districts, and other special zoning districts, including overlay districts, are well established.[99] Oklahoma City has three business improvement districts, including one encompassing the central business district.

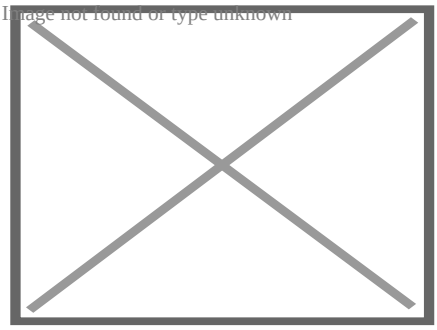
Culture

[edit]

Museums and theaters

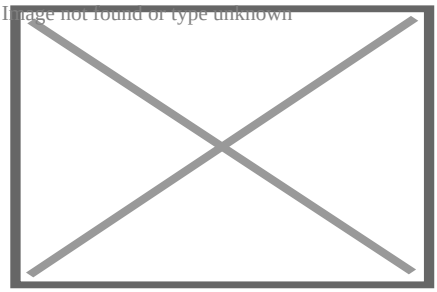
[edit]

This article **needs additional citations for verification**. Please help improve this article by adding citations to reliable sources. Unsourced material may be challenged and removed.
Find sources: "Oklahoma City" – news · newspapers · books · scholar · JSTOR *(April 2018) (Learn how and when to remove this message)*



Water taxis in Oklahoma City's downtown Bricktown neighborhood

The Donald W. Reynolds Visual Arts Center is the new downtown home for the Oklahoma City Museum of Art. The museum features visiting exhibits, original selections from its collection, a theater showing various foreign, independent, and classic films each week, and a restaurant. OKCMOA is also home to the most comprehensive collection of Chihuly glass in the world, including the 55-foot Eleanor Blake Kirkpatrick Memorial Tower in the Museum's atrium.[100] The art deco Civic Center Music Hall, which was renovated in 2001, has performances from the Oklahoma City Ballet, the Oklahoma City Opera, the Oklahoma City Philharmonic, and also various concerts and traveling Broadway shows.



The Survivor Tree on the grounds of the Oklahoma City National Memorial

Other theaters include the Lyric Theatre, Jewel Box Theatre, Kirkpatrick Auditorium, the Poteet Theatre, the Oklahoma City Community College Bruce Owen Theater, and the 488-seat Petree Recital Hall at the Oklahoma City University campus. The university opened the Wanda L Bass School of Music and Auditorium in April 2006.

The Oklahoma Contemporary Arts Center (formerly City Arts Center) moved downtown in 2020, near Campbell Art Park at 11th and Broadway, after being at the Oklahoma State Fair fairgrounds since 1989. It features exhibitions, performances, classes, workshops, camps, and weekly programs.

The Science Museum Oklahoma (formerly Kirkpatrick Science and Air Space Museum at Omniplex) houses exhibits on science and aviation and an IMAX theater. The museum formerly housed the International Photography Hall of Fame (IPHF), which displays photographs and artifacts from an extensive collection of cameras and other artifacts preserving the history of photography. IPHF honors those who have

contributed significantly to the art and/or science of photography and relocated to St. Louis, Missouri in 2013.

The Museum of Osteology displays over 450 real skeletons and houses over 7,000.[101] Focusing on the form and function of the skeletal system, this 7,000 sq ft (650 m^2) museum displays hundreds of skulls and skeletons from all corners of the world. Exhibits include adaptation, locomotion, classification, and diversity of the vertebrate kingdom. The Museum of Osteology is the only one of its kind in America.

The National Cowboy & Western Heritage Museum has galleries of western art[102] and is home to the Hall of Great Western Performers.[103]

In September 2021, the First Americans Museum opened to the public, focusing on the histories and cultures of the numerous tribal nations and many Indigenous peoples in the state of Oklahoma.[104]

The Oklahoma City National Memorial in the northern part of Oklahoma City's downtown was created as the inscription on its eastern gate of the Memorial reads, "to honor the victims, survivors, rescuers, and all who were changed forever on April 19, 1995"; the memorial was built on the land formerly occupied by the Alfred P. Murrah Federal Building complex before its 1995 bombing. The outdoor Symbolic Memorial can be visited 24 hours a day for free, and the adjacent Memorial Museum, in the former *Journal Record* building damaged by the bombing, can be entered for a small fee. The site is also home to the National Memorial Institute for the Prevention of Terrorism, a non-partisan, nonprofit think tank devoted to preventing terrorism.

The American Banjo Museum in the Bricktown Entertainment district is dedicated to preserving and promoting the music and heritage of the banjo.[105] Its collection is valued at $3.5 million[*citation needed*], and an interpretive exhibit tells the evolution of the banjo from its roots in American slavery, to bluegrass, to folk, and to world music.

The Oklahoma History Center is the state's history museum. Across the street from the governor's mansion at 800 Nazih Zuhdi Drive in northeast Oklahoma City, the museum opened in 2005 and is operated by the Oklahoma Historical Society. It preserves Oklahoma's history from the prehistoric to the present day.

The Oklahoma State Firefighters Museum contains early colonial firefighting tools, the first fire station in Oklahoma,[106] and modern fire trucks.[107]

Restaurants

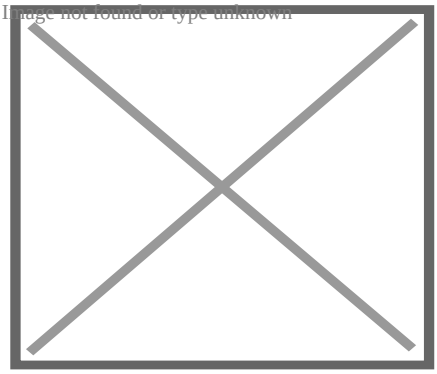
[edit]

Florence's Restaurant in 2022 was named one of America's Classics by the James Beard Foundation.[108][109] It was the first James Beard award for an Oklahoma entity.[108] *The Oklahoman* called Florence's "The Grand Dame of all local restaurants".[110] Andrew Black, chef/owner of Grey Sweater, won the 2023 James Beard Award for Best Chef Southwest.[111]

The Food Network show *Diners, Drive-Ins, and Dives* has been to several restaurants in the Oklahoma City metropolitan area. Some of these include Cattlemen's Steakhouse, Chick N Beer, Clanton's Cafe, The Diner, Eischen's Bar, Florence's Restaurant, and Guyutes, among several others.[112]

Sports

[edit]
Main article: Sports in Oklahoma City



Chickasaw Bricktown Ballpark, home of the Oklahoma City Comets

Oklahoma City is home to several professional sports teams, including the Oklahoma City Thunder of the National Basketball Association. The Thunder is the city's second "permanent" major professional sports franchise after the now-defunct AFL Oklahoma Wranglers. It is the third major-league team to call the city home when considering the temporary hosting of the New Orleans/Oklahoma City Hornets for the 2005–06 and 2006–07 NBA seasons. However, the Thunder was formerly the Sonics before the movement of the Sonics to OKC in 2008.

Other professional sports clubs in Oklahoma City include the Oklahoma City Comets, the Triple-A affiliate of the Los Angeles Dodgers, the Oklahoma City Energy FC of the United Soccer League, and the Crusaders of Oklahoma Rugby Football Club of USA Rugby. The Oklahoma City Blazers, a name used for decades of the city's hockey team in the Central Hockey League, has been used for a junior team in the Western States Hockey League since 2014.

The Paycom Center in downtown is the main multipurpose arena in the city, which hosts concerts, NHL exhibition games, and many of the city's pro sports teams. In 2008, the Oklahoma City Thunder became the primary tenant. Nearby in Bricktown, the Chickasaw Bricktown Ballpark is the home to the city's baseball team, the Comets. "The Brick", as it is locally known, is considered one of the finest minor league parks in the nation.[113]

Oklahoma City hosts the World Cup of Softball and the annual NCAA Women's College World Series. The city has held 2005 NCAA Men's Basketball First and Second round and hosted the Big 12 Men's and women's basketball tournaments in 2007 and 2009. The major universities in the area – University of Oklahoma, Oklahoma City University, and Oklahoma State University – often schedule major basketball games and other sporting events at Paycom Center and Chickasaw Bricktown Ballpark. However, most home games are played at their campus stadiums.

Other major sporting events include Thoroughbred and Quarter Horse racing circuits at Remington Park and numerous horse shows and equine events that take place at the state fairgrounds each year. There are multiple golf courses and country clubs spread around the city.

High school football

[edit]

The state of Oklahoma hosts a highly competitive high school football culture, with many teams in the Oklahoma City metropolitan area. The Oklahoma Secondary School Activities Association (OSSAA) organizes high school football into eight distinct classes based on school enrollment size. Beginning with the largest, the classes are 6A, 5A, 4A, 3A, 2A, A, B, and C. Class 6A is broken into two divisions. Oklahoma City schools in include: Westmoore, Putnam City North, Putnam City, Putnam City West, Southeast, Capitol Hill, U.S. Grant, and Northwest Classen.[114]

Oklahoma City Thunder

[edit]

The Oklahoma City Thunder of the National Basketball Association (NBA) has called Oklahoma City home since the 2008–09 season, when owner Clay Bennett relocated the franchise from Seattle, Washington. The Thunder plays home games in downtown Oklahoma City at the Paycom Center. The Thunder is known by several nicknames, including "OKC Thunder" and simply "OKC", and its mascot is Rumble the Bison.

After arriving in Oklahoma City for the 2008–09 season, the Oklahoma City Thunder secured a berth (8th) in the 2010 NBA Playoffs the following year after boasting its first 50-win season, winning two games in the first round against the Los Angeles Lakers. In 2012, Oklahoma City made it to the NBA Finals but lost to the Miami Heat in five games. In 2013, the Thunder reached the Western Conference semi-finals without All-Star guard Russell Westbrook, who was injured in their first-round series against the Houston Rockets, only to lose to the Memphis Grizzlies. In 2014, Oklahoma City reached the NBA's Western Conference Finals again but eventually lost to the San Antonio Spurs in six games.

Sports analysts have regarded the Oklahoma City Thunder as one of the elite franchises of the NBA's Western Conference and a media darling of the league's future. Oklahoma City earned Northwest Division titles every year from 2011 to 2014 and again in 2016 and has consistently improved its win record to 59 wins in 2014. The Thunder is led by third-year head coach Mark Daigneault and was anchored by All-Star point guard Russell Westbrook before a July 2019 trade that sent him to the Houston Rockets.

Hornets

[edit]
Main article: Effect of Hurricane Katrina on the New Orleans Hornets

In the aftermath of Hurricane Katrina, the NBA's New Orleans Hornets temporarily relocated to the Ford Center, playing the majority of its home games there during the 2005–06 and 2006–07 seasons. The team became the first NBA franchise to play regular-season games in Oklahoma.[*citation needed*] The team was known as the New Orleans/Oklahoma City Hornets while playing in Oklahoma City. The team returned to New Orleans full-time for the 2007–08 season. The Hornets played their final home game in Oklahoma City during the exhibition season on October 9, 2007, against the Houston Rockets.

Professional sports teams

[edit]
Main article: Sports in Oklahoma City

Current professional sports teams

Sports Franchise	League	Sport	Founded	Stadium (capacity)
Oklahoma City Thunder	NBA	Basketball	2008	Paycom Center (18,203)

Oklahoma City Comets	MiLB	Baseball	1998	Chickasaw Bricktown Ballpark (13,066)
Oklahoma City Blue	NBA G League	Basketball	2018	Paycom Center (18,203)
Oklahoma City Energy	USL Championship (Division 2)	Soccer	2018	Taft Stadium (7,500)
Oklahoma City Football Club	Women's Premier Soccer League	Soccer	2022	Brian Harvey Field (1,500)
Oklahoma City Spark	Women's Professional Fastpitch	Softball	2023	USA Softball Hall of Fame Stadium (13,500)

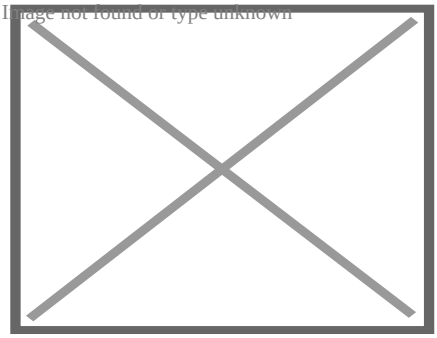
2028 Olympics

[edit]

Venues in Oklahoma City will host two events during the 2028 Summer Olympics, which will primarily be held in Los Angeles. The LA Olympic Organizing Committee opted to have canoe slalom and softball in Oklahoma City, given the lack of acceptable venues for those sports in Los Angeles. Riversport OKC will host the canoe slalom competition, while Devon Park will host the softball competition. Oklahoma City is located approximately 1,300 miles away from Los Angeles.[115]

Parks and recreation

[edit]



Myriad Botanical Gardens, the centerpiece of downtown OKC's central business district

One of the more prominent landmarks of downtown Oklahoma City is the Crystal Bridge tropical conservatory at the Myriad Botanical Gardens, a large downtown urban park. Designed by I. M. Pei, the park also includes the Water Stage amphitheater, a bandshell, and lawn, a sunken pond complete with koi, an interactive children's garden

complete with a carousel and water sculpture, various trails and interactive exhibits that rotate throughout the year including the ice skating in the Christmas winter season. In 2007, following a renovation of the stage, *Oklahoma Shakespeare In The Park* relocated to the Myriad Gardens. Bicentennial Park, also downtown located near the Oklahoma City Civic Center campus, is home to the annual *Festival of the Arts* in April.

The Scissortail Park is just south of the Myriad Gardens, a large interactive park that opened in 2021. This park contains a large lake with paddleboats, a dog park, a concert stage with a great lawn, a promenade including the Skydance Bridge, a children's interactive splash park and playground, and numerous athletic facilities. Farmers Market is a common attraction at Scissortail Park during the season, and there are multiple film showings, food trucks, concerts, festivals, and civic gatherings.

Returning to the city's first parks masterplan, Oklahoma City has at least one major park in each quadrant outside downtown. Will Rogers Park, the Grand Boulevard loop once connected Lincoln Park, Trosper Park, and Woodson Park, some sections of which no longer exist. Martin Park Nature Center is a natural habitat in far northwest Oklahoma City. Will Rogers Park is home to the *Lycan Conservatory*, the Rose Garden, and the Butterfly Garden, all built in the WPA era. In April 2005, the *Oklahoma City Skate Park* at Wiley Post Park was renamed the *Mat Hoffman Action Sports Park* to recognize Mat Hoffman, an Oklahoma City area resident and businessman who was instrumental in the design of the skate park and is a 10-time BMX World Vert champion.[116]

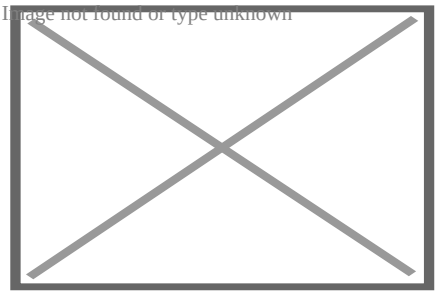
Walking trails line the Bricktown Canal and the Oklahoma River in downtown. The city's bike trail system follows around Lake Hefner and Lake Overholser in the northwest and west quadrants of the city. The majority of the east shore area of Lake Hefner is taken up by parks and bike trails, including a new leashless dog park and the postwar-era *Stars and Stripes Park*, and eateries near the lighthouse. Lake Stanley Draper, in southeast Oklahoma City, is the city's largest and most remote lake, offering a genuine rural yet still urban experience.

The Oklahoma City Zoo and Botanical Garden is home to numerous natural habitats, WPA era architecture and landscaping, and major touring concerts during the summer at its amphitheater. Nearby is a combination racetrack and casino, Remington Park, which hosts both Quarter Horse (March – June) and Thoroughbred (August—December) seasons.

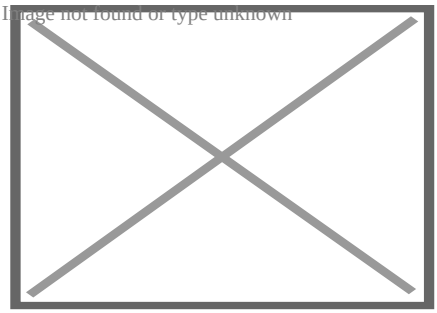
Oklahoma City is also home to the American Banjo Museum, which houses a large collection of highly decorated banjos from the early 20th century and exhibits the banjo's history and its place in American history. Concerts and lectures are also held there.

Government

[edit]
Main article: Government of Oklahoma City
See also: List of mayors of Oklahoma City



Oklahoma State Capitol, seen from the OK History Center



The Art Deco city hall building, a block from the Civic Center

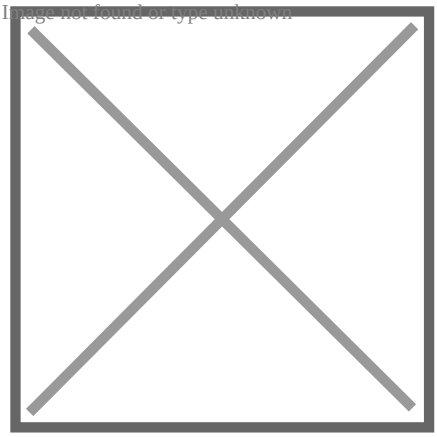
The City of Oklahoma City has operated under a council-manager form of city government since 1927.[117] David Holt assumed the office of Mayor on April 10, 2018, after being elected two months earlier.[118] Eight councilpersons represent each of the eight wards of Oklahoma City. The City Council appointed current City Manager Craig Freeman on November 20, 2018. Freeman took office on January 2, 2018, succeeding James D. Couch, who had served in the role since 2000. Before becoming City Manager, Craig Freeman served as Finance Director for the city.[119]

Politics

[edit]

Similar to many American cities, Oklahoma City is politically conservative in its suburbs and liberal in the central city. In the United States House of Representatives, it is represented by Republicans Stephanie Bice and Tom Cole of the 5th and 4th districts, respectively. The city has called on residents to vote for sales tax-based projects to revitalize parts of the city. The Bricktown district is the best example of such an initiative. In the recent MAPS 3 vote, the city's fraternal police order criticized the

project proposals for not doing enough to expand the police presence to keep up with the growing residential population and increased commercial activity. In September 2013, Oklahoma City area attorney David Slane announced he would pursue legal action regarding MAPS3 on claims the multiple projects that made up the plan violate a state constitutional law limiting voter ballot issues to a single subject.[120]



Oklahoma City region population dot map and 2016 presidential election results by precinct (click to enlarge).

Oklahoma County Voter Registration and Party Enrollment as of November 1, 2020[121]

Party	Number of Voters	Percentage
Democratic	164,628	37.26%
Republican	189,991	43.00%
Libertarian	3,385	0.77%
Unaffiliated	83,799	18.97%
Total	**441,803**	**100%**

International relations

Consulates

[edit]

Consulate	Date	Consular District
Guatemalan Consulate-General, Oklahoma City[122]	06.2017	Oklahoma, Kansas
Mexican Consulate, Oklahoma City[123]	05.2023	Oklahoma
Germany Honorary Consulate, Oklahoma City		

Twin towns – sister cities

[edit]

Oklahoma City's sister cities are:[124]

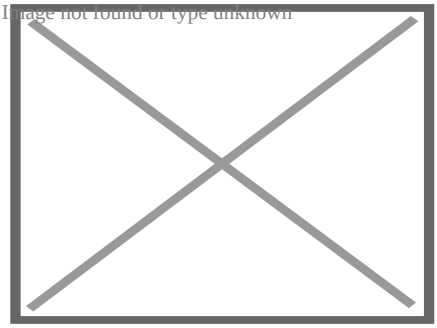
- Brazil Rio de Janeiro, Brazil
- China Haikou, China
- Mexico Puebla, Mexico
- Peru Piura, Peru
- Rwanda Kigali, Rwanda
- Russia Ulyanovsk, Russia (suspended August, 2022)
- Taiwan Tainan, Taiwan
- Taiwan Taipei, Taiwan
- Australia Darwin, Australia

Education

[edit]

Higher education

[edit]
See also: List of colleges and universities in Oklahoma City



OU Health Sciences Center in Oklahoma City

The city is home to several colleges and universities. Oklahoma City University, formerly known as Epworth University, was founded by the United Methodist Church on September 1, 1904, and is known for its performing arts, science, mass communications, business, law, and athletic programs. OCU has its main campus in the north-central section of the city, near the city's Asia District area. OCU Law is in the old Central High School building in the Midtown district near downtown.

The University of Oklahoma has several institutions of higher learning in the city and metropolitan area, with OU Medicine and the University of Oklahoma Health Sciences

Center campuses east of downtown in the Oklahoma Health Center district, and the main campus to the south in the suburb of Norman. OU Medical Center hosts the state's only Level-One trauma center. OU Health Sciences Center is one of the nation's largest independent medical centers, employing over 12,000 people.[125] OU is one of only four major universities in the nation to operate six medical schools. [*clarification n*

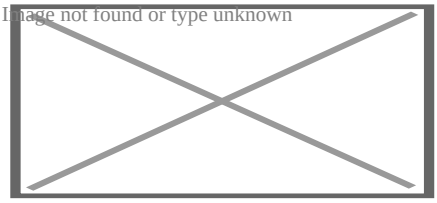
The third-largest university in the state, the University of Central Oklahoma, is just north of the city in the suburb of Edmond. Oklahoma Christian University, one of the state's private liberal arts institutions, is just south of the Edmond border, inside the Oklahoma City limits.[126]

Oklahoma City Community College in south Oklahoma City is the second-largest community college in the state. Rose State College is east of Oklahoma City in suburban Midwest City. Oklahoma State University–Oklahoma City is in the "Furniture District" on the Westside. Northeast of the city is Langston University, the state's historically black college (HBCU). Langston also has an urban campus in the eastside section of the city. Southern Nazarene University, which was founded by the Church of the Nazarene, is a university in suburban Bethany, which is surrounded by the Oklahoma City city limits.

Although technically not a university, the FAA's Mike Monroney Aeronautical Center has many aspects of an institution of higher learning. Its FAA Academy is accredited by the Higher Learning Commission. Its Civil Aerospace Medical Institute (CAMI) has a medical education division responsible for aeromedical education in general, as well as the education of aviation medical examiners in the U.S. and 93 other countries. In addition, The National Academy of Science offers Research Associateship Programs for fellowship and other grants for CAMI research.

Primary and secondary

[edit]
Main article: Education in Oklahoma City



Bishop McGuinness Catholic High School

Oklahoma City is home to (as of 2009) the state's largest school district, Oklahoma City Public Schools,[127] which covers the most significant portion of the city.[128] The district's Classen School of Advanced Studies and Harding Charter Preparatory High

School rank high among public schools nationally according to a formula that looks at the number of Advanced Placement, International Baccalaureate and/or Cambridge tests taken by the school's students divided by the number of graduating seniors.[129] In addition, OKCPS's Belle Isle Enterprise Middle School was named the top middle school in the state according to the Academic Performance Index and recently received the Blue Ribbon School Award, in 2004 and again in 2011.[130]

Due to Oklahoma City's explosive growth, parts of several suburban districts spill into the city. All but one of the school districts in Oklahoma County includes portions of Oklahoma City. The other districts in that county covering OKC include: Choctaw/Nicoma Park, Crooked Oak, Crutcho, Deer Creek, Edmond, Harrah, Jones, Luther, McLoud, Mid-Del, Millwood, Moore, Mustang, Oakdale, Piedmont, Putnam City, and Western Heights.[128] School districts in Cleveland County covering portions of Oklahoma City include: Little Axe, McLoud, Mid-Del, Moore, and Robin Hill.[131] Within Canadian County, Banner, Mustang, Piedmont, Union City, and Yukon school districts include parts of OKC.[132]

There are also charter schools. KIPP Reach College Preparatory School in Oklahoma City received the 2012 National Blue Ribbon, and its school leader, Tracy McDaniel Sr., was awarded the Terrel H. Bell Award for Outstanding Leadership.

The city also boasts several private and parochial schools. Casady School and Heritage Hall School are both examples of a private college preparatory school with rigorous academics that range among the top in Oklahoma. Providence Hall is a Protestant school. Two prominent schools of the Archdiocese of Oklahoma City include Bishop McGuinness High School and Mount Saint Mary High School. Other private schools include the Advanced Science and Technology Education Center and Crossings Christian School.

The Oklahoma School of Science and Mathematics, a school for some of the state's most gifted math and science pupils, is also in Oklahoma City.

CareerTech

[edit]

Oklahoma City has several public career and technology education schools associated with the Oklahoma Department of Career and Technology Education, the largest of which are Metro Technology Center and Francis Tuttle Technology Center.

Private career and technology education schools in Oklahoma City include Oklahoma Technology Institute, Platt College, Vatterott College, and Heritage College. The Dale Rogers Training Center is a nonprofit vocational training center for individuals with

disabilities.

Media

[edit]
See also: Media in Oklahoma City

Print

[edit]

The Oklahoman is Oklahoma City's major daily newspaper and is the most widely circulated in the state. NewsOK.com is the Oklahoman's online presence. *Oklahoma Gazette* is Oklahoma City's independent newsweekly, featuring such staples as local commentary, feature stories, restaurant reviews, movie listings, and music and entertainment. *The Journal Record* is the city's daily business newspaper, and *okcBIZ* is a monthly publication that covers business news affecting those who live and work in Central Oklahoma.

Numerous community and international newspapers cater to the city's ethnic mosaic, such as *The Black Chronicle*, headquartered in the Eastside, the OK VIETIMES and *Oklahoma Chinese Times*, in Asia District, and various Hispanic community publications. *The Campus* is the student newspaper at Oklahoma City University. Gay publications include *The Gayly Oklahoman*.

An upscale lifestyle publication called *405 Magazine* (formerly Slice Magazine) is circulated throughout the metropolitan area.[133] In addition, there is a magazine published by *Back40 Design Group* called *The Edmond Outlook*. It contains local commentary and human interest pieces directly mailed to over 50,000 Edmond residents.

Ready Player One is set in Oklahoma City in the year 2045.

Broadcast

[edit]

Oklahoma City was home to several pioneers in radio and television broadcasting. Oklahoma City's WKY Radio was the first radio station transmitting west of the Mississippi River and the third radio station in the United States.[134] WKY received its federal license in 1921 and has continually broadcast under the same call letters since 1922. In 1928, WKY was purchased by E.K. Gaylord's Oklahoma Publishing Company and affiliated with the NBC Red Network; in 1949, WKY-TV (channel 4) went on the air

and later became the first independently owned television station in the U.S. to broadcast in color.[134] In mid-2002, WKY radio was purchased outright by Citadel Broadcasting, who was bought out by Cumulus Broadcasting in 2011. The Gaylord family earlier sold WKY-TV in 1976, which has gone through a succession of owners (what is now KFOR-TV is owned by Nexstar Media Group as of October 2019).

The major U.S. broadcast television networks have affiliates in the Oklahoma City market (ranked 41st for television by Nielsen and 48th for radio by Arbitron, covering a 34-county area serving the central, north-central and west-central sections of Oklahoma); including NBC affiliate KFOR-TV (channel 4), ABC affiliate KOCO-TV (channel 5), CBS affiliate KWTV-DT (channel 9, the flagship of locally based Griffin Media), PBS station KETA-TV (channel 13, the flagship of the state-run OETA member network), Fox affiliate KOKH-TV (channel 25), independent station KOCB (channel 34), CW owned-and-operated station KAUT-TV (channel 43), MyNetworkTV affiliate KSBI-TV (channel 52), and Ion Television affiliate KOPX-TV (channel 62). The market is also home to several religious stations, including TBN owned-and-operated station KTBO-TV (channel 14) and Norman-based Daystar owned-and-operated station KOCM (channel 46).

Despite the market's geographical size, none of the English-language commercial affiliates in the Oklahoma City designated market area operate full-power satellite stations covering the far northwestern part of the state (requiring cable or satellite to view them). However, KFOR-TV, KOCO-TV, KWTV-DT, and KOKH-TV each operate low-power translators in that portion of the market. Oklahoma City is one of the few markets between Chicago and Dallas to have affiliates of two or more of the significant Spanish-language broadcast networks: Telemundo affiliate KTUZ-TV (channel 30), Woodward-based Univision/UniMás affiliate KUOK 35 (whose translator KUOK-CD, channel 36, serves the immediate Oklahoma City area), and Estrella TV affiliate KOCY-LD (channel 48). (Locally based Tyler Media Group, which owns the three stations above, also owns eight radio stations in the market, including Regional Mexican-formatted KTUZ-FM (106.7) and news–talk outlet KOKC (1520 AM).)

Infrastructure

[edit]

Fire department

[edit]

Image not found or type unknown

OKCFD dive team at Lake Hefner

Image not found or type unknown

OKCFD ambulance

Oklahoma City is protected by the Oklahoma City Fire Department (OKCFD), which employs 1015 paid, professional firefighters. The current Chief of Department is Richard Kelley, and the department is commanded by three Deputy Chiefs, who – along with the department chief – oversee the Operational Services, Prevention Services, and Support Services bureaus. The OKCFD operates out of 37 fire stations throughout the city in six battalions. The OKCFD operates a fire apparatus fleet of 36 engine companies (including 30 paramedic engines), 13 ladder companies, 16 brush pumper units, six water tankers, two hazardous materials units, one Technical Rescue Unit, one Air Supply Unit, six Arson Investigation Units, and one Rehabilitation Unit along with several special units. Each engine Company is staffed with a driver, an officer, and one to two firefighters, while each ladder company is staffed with a driver, an officer, and one firefighter. The minimum staffing for each shift is 213 personnel. The Oklahoma City Fire Department responds to over 70,000 emergency calls annually.[135][136][137]

Transportation

[edit]
Main article: Transportation in Oklahoma City

Highway

[edit]

Oklahoma City is an integral point on the United States Interstate Network, with three major interstate highways – Interstate 35, Interstate 40, and Interstate 44 – bisecting the city. Interstate 240 connects Interstate 40 and Interstate 44 in south Oklahoma City. At the same time, Interstate 235 spurs from Interstate 44 in north-central Oklahoma City into downtown. Interstate 44, between NW 23rd St and NW 36th St, is

the busiest roadway in the city and state, with an average daily traffic count of 167,200 vehicles per day in 2018.[138]

Major state expressways through the city include Lake Hefner Parkway (SH-74), the Kilpatrick Turnpike, Airport Road (SH-152), and Broadway Extension (US-77) which continues from I-235 connecting Central Oklahoma City to Edmond. Lake Hefner Parkway runs through northwest Oklahoma City, while Airport Road runs through southwest Oklahoma City and leads to Will Rogers World Airport. The Kilpatrick Turnpike loops around north and west Oklahoma City.

Oklahoma City also has several major national and state highways within its city limits. Shields Boulevard (US-77) continues from E.K. Gaylord Boulevard in downtown Oklahoma City and runs south, eventually connecting to I-35 near the suburb of Moore, Oklahoma. Northwest Expressway (Oklahoma State Highway 3) runs from North Classen Boulevard in north-central Oklahoma City to the northwestern suburbs.

The following significant expressways traverse Oklahoma City:

- Interstate 35
- Interstate 40 (Crosstown Expressway, Stanley Draper Expressway, Tinker Diagonal, Tom Stead Memorial Highway)
- Interstate 44 (Turner Turnpike, Belle Isle Freeway, Will Rogers Expressway, H.E. Bailey Turnpike)
- Interstate 235 (Centennial Expressway) / U.S. 77 (Broadway Extension)
- Interstate 240 (Southwest Expressway)
- Lake Hefner Parkway (State Highway 74)
- Airport Road (State Highway 152)
- Kilpatrick Turnpike

Air

[edit]

Oklahoma City is served by two primary airports, Will Rogers World Airport and the much smaller Wiley Post Airport (incidentally, the two honorees died in the same plane crash in Alaska)[139] Will Rogers World Airport is the state's busiest commercial airport, with 4,341,159 passengers served in 2018, a historical record.[140]

Tinker Air Force Base, in southeast Oklahoma City, is the largest military air depot in the nation. It is a major maintenance and deployment facility for the Navy and the Air Force and the second largest military institution in the state (after Fort Sill in Lawton).

Image not found or type unknown

United Airlines Embraer 170 aircraft at the East Concourse of Will Rogers World Airport

Rail and intercity bus

[edit]

Amtrak has a station downtown at the Santa Fe Depot, with daily service to Fort Worth and the nation's rail network via the Heartland Flyer. Oklahoma City once was the crossroads of several interstate passenger railroads at the Santa Fe Depot, the Union Station, and the Missouri-Kansas-Texas Railroad station.[141] But service at that level has long since been discontinued. However, several proposals to extend the current train service have been made, including a plan to expand the Heartland Flyer to Newton, Kansas, which is currently being connected through Amtrak Thruway. Freight service is provided by BNSF Railway, Union Pacific Railroad, and Stillwater Central.

Greyhound and several other intercity bus companies serve Oklahoma City at the Union Bus Station in downtown.

Public transit

[edit]
Main articles: Embark (transit authority) and Oklahoma City Streetcar

Image not found or type unknown

Streetcar of the OKC Streetcar system passing the historic First United Methodist Church, in downtown

Embark (formerly Metro Transit) is the city's public transit company. The primary transfer terminal is downtown at NW 5th Street and Hudson Avenue. Embark maintains limited coverage of the city's primary street grid using a hub-and-spoke system from the main terminal, making many journeys impractical due to the relatively small number of bus routes offered and that most trips require a transfer downtown. The city has recognized transit as a significant issue for the rapidly growing and urbanizing city. It has initiated several recent studies to improve the existing bus system, starting with a plan known as the Fixed Guideway Study.[142] This study identified several potential commuter transit routes from the suburbs into downtown OKC as well as feeder-line bus and/or rail routes throughout the city.

Though Oklahoma City has no light rail or commuter rail service, city residents identified improved transit as one of their top priorities. From the fruits of the Fixed Guideway and other studies, city leaders strongly desire to incorporate urban rail transit into the region's future transportation plans. The greater Oklahoma City metropolitan transit plan identified from the Fixed Guideway Study includes a streetcar system in the downtown area, to be fed by enhanced city bus service and commuter rail from the suburbs including Edmond, Norman, and Midwest City. There is a significant push for a commuter rail line connecting downtown OKC with the eastern suburbs of Del City, Midwest City, and Tinker Air Force Base. In addition to commuter rail, a short heritage rail line that would run from Bricktown just a few blocks away from the Amtrak station to the Adventure District in northeast Oklahoma City is under reconstruction.

In December 2009, Oklahoma City voters passed MAPS 3, the $777 million (7-year, 1-cent tax) initiative. This initiative would generate funding (approx. $130 million) for the modern Oklahoma City Streetcar system in downtown Oklahoma City and the establishment of a transit hub.

On September 10, 2013, the federal government announced that Oklahoma City would receive a $13.8-million grant from the U.S. Department of Transportation's TIGER program. This was the first-ever grant for Oklahoma City for a rail-based initiative and is thought to be a turning point for city leaders who have applied for grants in the past, only to be denied continuously. It is believed the city will use the TIGER grant along with approximately $10 million from the MAPS 3 Transit budget to revitalize the city's Amtrak station, becoming an Intermodal Transportation Hub, taking over the role of the existing transit hub at NW 5th/Hudson Ave.[*citation needed*]

Construction of the Oklahoma City Streetcar system in Downtown OKC began in early 2017,[143] and the system opened for service in December 2018.[144][145] Also known as the Maps 3 Streetcar, it connects the areas of Bricktown, Midtown and Downtown. The 6.9 mi (11.1 km) system serves the greater Downtown area using modern low-floor streetcars. The initial system consists of two lines connecting

Oklahoma City's Central Business District with the entertainment district, Bricktown, and the Midtown District. Expansion to other districts surrounding downtown and more routes in the CBD is already underway.[*citation needed*]

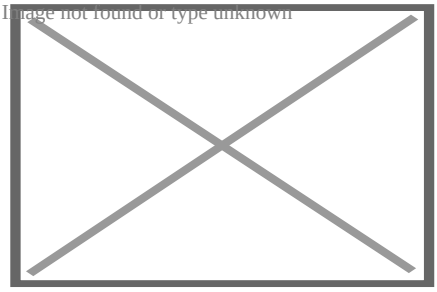
Walkability

[edit]

A 2013 study by Walk Score ranked Oklahoma City the 43rd most walkable out of the 50 largest U.S. cities. Oklahoma City has 18 neighborhoods with a Walk Score above 60, mainly close to the downtown core.[146]

Health

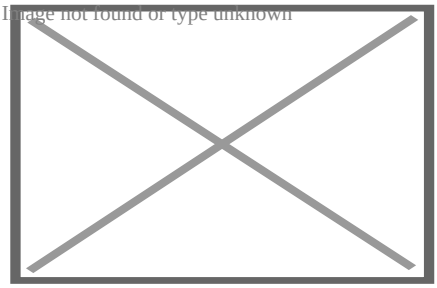
[edit]



OU Physicians Center

Oklahoma City and the surrounding metropolitan area have several healthcare facilities and specialty hospitals. In Oklahoma City's MidTown district near downtown resides the state's oldest and largest single-site hospital, St. Anthony Hospital and Physicians Medical Center.

OU Medicine, an academic medical institution on the campus of The University of Oklahoma Health Sciences Center, is home to OU Medical Center. OU Medicine operates Oklahoma's only level-one trauma center at the OU Medical Center and the state's only level-one trauma center for children at Children's Hospital at OU Medicine,[147] both of which are in the Oklahoma Health Center district. Other medical facilities operated by OU Medicine include OU Physicians and OU Children's Physicians, the OU College of Medicine, the Oklahoma Cancer Center, and OU Medical Center Edmond, the latter in the northern suburb of Edmond.



INTEGRIS Baptist Medical Center

INTEGRIS Health owns several hospitals, including INTEGRIS Baptist Medical Center, the INTEGRIS Cancer Institute of Oklahoma,[148] and the INTEGRIS Southwest Medical Center.[149] INTEGRIS Health operates hospitals, rehabilitation centers, physician clinics, mental health facilities, independent living centers, and home health agencies throughout much of Oklahoma. INTEGRIS Baptist Medical Center ranks high-performing in the following categories: Cardiology and Heart Surgery; Diabetes and Endocrinology; Ear, Nose and Throat; Gastroenterology; Geriatrics; Nephrology; Orthopedics; Pulmonology and Urology.

The Midwest Regional Medical Center is in the suburb of Midwest City; other significant hospitals include the Oklahoma Heart Hospital and the Mercy Health Center. There are 347 physicians for every 100,000 people in the city.

In the American College of Sports Medicine's annual ranking of the United States' 50 most populous metropolitan areas on the basis of community health, Oklahoma City took last place in 2010, falling five spots from its 2009 rank of 45.[150] The ACSM's report, published as part of its American Fitness Index program, cited, among other things, the poor diet of residents, low levels of physical fitness, higher incidences of obesity, diabetes, and cardiovascular disease than the national average, low access to recreational facilities like swimming pools and baseball diamonds, the paucity of parks and low investment by the city in their development, the high percentage of households below the poverty level, and the lack of state-mandated physical education curriculum as contributing factors.[151]

Notable people

[edit]
For a more comprehensive list, see List of people from Oklahoma City.

See also

[edit]
- Coyle v. Smith
- History of Oklahoma
- List of mayors of Oklahoma City

- USS *Oklahoma City*, 2 ships

Portals:

- Geography
- North America
- Oklahoma
- United States
- Cities

Notes

[edit]

1. **^** Mean monthly maxima and minima (i.e. the expected highest and lowest temperature readings at any point during the year or given month) calculated based on data at said location from 1991 to 2020.
2. **^** Official records for Oklahoma City were kept at the Weather Bureau Office from November 1890 to December 1953, and at Will Rogers World Airport since January 1954. For more information, see Threadex

References

[edit]

1. **^** *Lackmeyer, Steve (December 24, 2019). "Why Oklahoma City as 'The Big Friendly' lacks a friendly embrace". Retrieved August 29, 2023.*
2. **^** U.S. City Monikers, Tagline Guru website, accessed January 5, 2008
3. ^ ***a b*** *"Oklahoma City". Oklahoma History Society. Archived from the original on April 2, 2016. Retrieved April 12, 2016.*
4. **^** *"ArcGIS REST Services Directory". United States Census Bureau. Retrieved September 20, 2022.*
5. ^ ***a b*** U.S. Geological Survey Geographic Names Information System: Oklahoma City
6. **^** *"2020 Population and Housing State Data". United States Census Bureau. Retrieved August 22, 2021.*
7. **^** *"Total Gross Domestic Product for Oklahoma City, OK (MSA)". fred.stlouisfed.org.*
8. **^** *"Zip Code Lookup". USPS. Archived from the original on November 4, 2010. Retrieved December 11, 2008.*
9. **^** *"Find a County". National Association of Counties. Archived from the original on May 31, 2011. Retrieved June 7, 2011.*
10. **^** *"U.S. Census Bureau QuickFacts: Oklahoma City city, Oklahoma".*
11. ^ ***a b*** *"Metropolitan and Micropolitan Statistical Areas". 2018 Population Estimates . United States Census Bureau, Population Division. April 15, 2019. Retrieved April 18, 2019.* [*permanent dead link*]
12. **^** *"Stockyards City | Oklahoma City Districts". Visitokc.com.*

13. **^** *Shariat, Sheryll; Mallonee, Sue; Stidham, Shelli Stephens (December 1998). Oklahoma City Bombing Injuries (PDF) (Report). Injury Prevention Service, Oklahoma State Department of Health. pp. 2–3. Retrieved October 21, 2024.*
14. ^ ***a b*** *"Tornadoes Which Have Occurred in the Oklahoma City, Oklahoma Area Since 1890". National Weather Service Norman Oklahoma. Archived from the original on February 17, 2017. Retrieved December 8, 2015.*
15. **^** (2009) Kansas Historical Society, Ioway-Otoe-Missouria Language Project, English to Ioway-Otoe-Missouria Dictionary, "Dictionary N-O (English to Baxoje)", "Oklahoma City, Okla.". Link
16. **^** Gordon Whittaker, 2005, "A Concise Dictionary of the Sauk Language", The Sac & Fox National Public Library Stroud, Oklahoma. [1]
17. **^** *Hoig, Stan. "Land Run of 1889". Encyclopedia of Oklahoma History & Culture. Oklahoma Historical Society. Archived from the original on February 21, 2014. Retrieved January 29, 2014.*
18. **^** Wilson, Linda D. "Oklahoma City", Archived May 25, 2011, at the Wayback Machine, Encyclopedia of Oklahoma History and Culture Archived February 1, 2015, at the Wayback Machine. Retrieved January 26, 2010.
19. **^** Wilson. Encyclopedia of Oklahoma History and Culture Archived February 1, 2015, at the Wayback Machine
20. **^** Curtis, Gene. "Only in Oklahoma: State capital location was a fight to the finish", *Tulsa World*. Retrieved February 4, 2010.
21. **^** *"Oklahoma Oil: Past, Present and Future" (PDF). Ogs.ou.edu.*
22. ^ ***a b c d e*** *"Race and Hispanic Origin for Selected Cities and Other Places: Earliest Census to 1990". U.S. Census Bureau. Archived from the original on August 12, 2012.*
23. **^** *Smallwood, James M. (1977). "Mr. Oklahoma City". Urban Builder : Life and Times of Stanley Draper. University of Oklahoma Press. pp. 197–198. ISBN 0-8061-1447-9.*
24. ^ ***a b*** *Dean, Bryan (December 28, 2012). "Former Oklahoma City Mayor Patience Latting dies at age 94". The Oklahoman. Retrieved January 11, 2013.*
25. **^** *"Criterion Group". OKCHistory.com. Archived from the original on October 7, 2011. Retrieved October 20, 2009.*
26. **^** *"The Criterion Group, main page". The Criterion Group. Archived from the original on October 29, 2009. Retrieved October 20, 2009.*
27. **^** *"Baum Building". OKCHistory.org. Archived from the original on July 7, 2009. Retrieved October 20, 2009.*
28. **^** *"Hales Building". OKCHistory.org. Archived from the original on July 7, 2009. Retrieved October 21, 2009.*
29. **^** Lackmeyer and Money, pp. 20, 42.
30. **^** *"Biltmore Hotel". OKCHistory.org. Archived from the original on July 25, 2009. Retrieved October 20, 2009.*
31. **^** Metropolitan Area Projects, Greater Oklahoma City Chamber. Retrieved February 5, 2010.

32. ^ *"Victims of the Oklahoma City bombing". USA Today. Associated Press. June 20, 2001. Archived from the original on February 15, 2012.*
33. ^ *"Oklahoma City National Memorial". National Park Service. Archived from the original on May 14, 2011.*
34. ^ *"Core to Shore at City of Oklahoma City". Okc.gov. Archived from the original on May 27, 2010.*
35. ^ *"About Oklahoma City". okc.gov. Archived from the original on February 23, 2016. Retrieved February 25, 2016.*
36. ^ Oklahoma Geography, NetState.com . Retrieved February 4, 2010.
37. ^ *"Ecoregions of Oklahoma" (PDF). Retrieved September 24, 2008.* [*permanent dead link*
38. ^ History of the Oklahoma City Zoo Archived January 17, 2016, at the Wayback Machine, Oklahoma City Life Web site. Retrieved February 5, 2010.
39. ^ Elmias Thomas Collection Projects Series Archived November 15, 2014, at the Wayback Machine, University of Oklahoma. Retrieved February 5, 2010.
40. ^ 2008 Oklahoma River [*permanent dead link*], City of Oklahoma City. Retrieved February 4, 2010. [*dead link*]
41. ^ American Fact Finder Table GCT-PH1 retrieved on July 17, 2008
42. ^ About Archived May 16, 2009, at the Wayback Machine, Modern Transit Project. Retrieved February 5, 2010.
43. ^ *"Devon Energy Center, Oklahoma City". SkyscraperPage.com. Retrieved February 16, 2022.*
44. ^ *"Cotter Ranch Tower, Oklahoma City". SkyscraperPage.com. Retrieved February 16, 2022.*
45. ^ *"First National Center, Oklahoma City". SkyscraperPage.com. Retrieved February 16, 2022.*
46. ^ *"BOK Park Plaza, Oklahoma City". SkyscraperPage.com. Retrieved February 16, 2022.*
47. ^ *"First Oklahoma Tower, Oklahoma City". SkyscraperPage.com. Retrieved February 16, 2022.*
48. ^ *"Strata Tower, Oklahoma City". SkyscraperPage.com. Retrieved February 16, 2022.*
49. ^ *"City Place, Oklahoma City". SkyscraperPage.com. Retrieved February 16, 2022.*
50. ^ *"Valliance Bank Tower, Oklahoma City". SkyscraperPage.com. Retrieved February 16, 2022.*
51. ^ *"One Leadership Square, Oklahoma City". SkyscraperPage.com. Retrieved February 16, 2022.*
52. ^ *"Bank of Oklahoma Plaza, Oklahoma City". SkyscraperPage.com. Retrieved February 16, 2022.*
53. ^ *"Scissortail Park | City of OKC". Okc.gov.*
54. ^ "Climatological averages and records" NWS Norman, Oklahoma. Retrieved August 22, 2012.

55. ^ ***a b c*** *"NowData ? NOAA Online Weather Data". National Oceanic and Atmospheric Administration. Retrieved May 31, 2021.*
56. **^** *Miller, Brandon (February 16, 2021). "These US cities had the coldest morning in decades -- with some reaching all-time record lows". CNN. Retrieved February 16, 2021.*
57. **^** *NOAA (2013). "Regional Climate Trends and Scenarios for the U.S. National Climate Assessment" (PDF). p. 58.*
58. **^** *"The Great Plains Tornado Outbreak of May 3–4, 1999". National Weather Service Norman Oklahoma. Retrieved May 30, 2013.*
59. **^** *"The Tornado Outbreak of May 20, 2013". National Weather Service Norman, Oklahoma. 2013. Retrieved May 30, 2013.*
60. **^** *"The May 31 – June 1, 2013 Tornado and Flash Flooding Event". National Weather Service Norman, Oklahoma. 2013. Retrieved June 10, 2013.*
61. **^** *"After massive storms in Oklahoma and Texas, at least nine killed and 30 people missing". Washington Post. May 26, 2015.*
62. **^** *"Station Name: OK OKLAHOMA CITY WILL ROGERS AP". U.S. Climate Normals 2020: U.S. Monthly Climate Normals (1991?2020). National Oceanic and Atmospheric Administration. Archived from the original on February 4, 2024. Retrieved May 31, 2021.*
63. **^** *"WMO Climate Normals for OKLAHOMA CITY/WSFO AP OK 1961–1990". National Oceanic and Atmospheric Administration. Archived from the original on February 4, 2024. Retrieved March 11, 2014.*
64. **^** *"Oklahoma City, Oklahoma, USA – Monthly weather forecast and Climate data". Weather Atlas. Retrieved January 28, 2019.*
65. **^** *"Annual Estimates of the Resident Population for Counties: April 1, 2020 to July 1, 2023". United States Census Bureau. Retrieved May 16, 2024.*
66. **^** *"U.S. Decennial Census". United States Census Bureau. Retrieved February 21, 2015.*
67. **^** *"Historical Census Browser". University of Virginia Library. Archived from the original on August 11, 2012. Retrieved February 21, 2015.*
68. **^** *Forstall, Richard L., ed. (March 27, 1995). "Population of Counties by Decennial Census: 1900 to 1990". United States Census Bureau. Retrieved February 21, 2015.*
69. **^** *"Census 2000 PHC-T-4. Ranking Tables for Counties: 1990 and 2000" (PDF). United States Census Bureau. April 2, 2001. Archived (PDF) from the original on October 9, 2022. Retrieved February 21, 2016.*
70. **^** *"State & County QuickFacts". United States Census Bureau. Archived from the original on June 6, 2011. Retrieved November 12, 2013.*
71. ^ ***a b*** *Indianapolis Star (October 21, 2014). "Oklahoma City city, Oklahoma Demographics and Housing 2020 Decennial Census | indystar.com". Data.indystar.com. Retrieved February 16, 2022.*
72. **^** *"Oklahoma 2010: Summary Population and Housing Statistics" (PDF). Census.gov. Retrieved March 15, 2020.*

73. **^** *Data Access and Dissemination Systems (DADS). "American FactFinder – Results". Census.gov. Archived from the original on February 12, 2020.*
74. **^** U.S. Census Bureau. "Income in the Past 12 Months (in 2022 Inflation-Adjusted Dollars)." American Community Survey, ACS 1-Year Estimates Subject Tables, Table S1901, 2022, https://data.census.gov/table/ACSST1Y2022.S1901?t=Income and Poverty&g=160XX00US4055000. Accessed on May 1, 2024.
75. **^** U.S. Census Bureau. "Per Capita Income in the Past 12 Months (in 2022 Inflation-Adjusted Dollars)." American Community Survey, ACS 1-Year Estimates Detailed Tables, Table B19301, 2022, https://data.census.gov/table/ACSDT1Y2022.B19301?t=Income and Poverty&g=160XX00US4055000. Accessed on May 1, 2024.
76. **^** U.S. Census Bureau. "Poverty Status in the Past 12 Months." American Community Survey, ACS 1-Year Estimates Subject Tables, Table S1701, 2022, https://data.census.gov/table/ACSST1Y2022.S1701?t=Income and Poverty&g=160XX00US4055000. Accessed on May 1, 2024.
77. **^** U.S. Census Bureau. "COUPLED HOUSEHOLDS, BY TYPE." Decennial Census, DEC Demographic and Housing Characteristics, Table PCT15, 2020, https://data.census.gov/table/DECENNIALDHC2020.PCT15?q=Oklahoma City city, Oklahoma&t=Relationship. Accessed on April 30, 2024.
78. **^** *"State & County QuickFacts – Oklahoma City (city), Oklahoma". United States Census Bureau. Archived from the original on March 28, 2009.*
79. **^** *"Hispanic or Latino, and Not Hispanic or Latino By Race". data.census.gov. United States Census Bureau. August 12, 2021. Retrieved February 12, 2022.*
80. **^** *"10 Least Segregated Cities In America".*
81. **^** *"P004 Hispanic or Latino, and Not Hispanic or Latino by Race – 2000: DEC Summary File 1 – Oklahoma City". United States Census Bureau.*
82. **^** *"P2 Hispanic or Latino, and not Hispanic or Latino by Race – 2010: DEC Redistricting Data (PL 94-171) – Oklahoma City". United States Census Bureau.*
83. **^** *"P2 Hispanic or Latino, and not Hispanic or Latino by Race – 2020: DEC Redistricting Data (PL 94-171) – Oklahoma City". United States Census Bureau.*
84. **^** *"Results". American Factfinder. United States Census Bureau. Retrieved March 24, 2016.* [*permanent dead link*]
85. ^ ***a b*** *"Maps and data files for 2020 | U.S. Religion Census | Religious Statistics & Demographics". www.usreligioncensus.org. Retrieved January 24, 2023.*
86. **^** *"Narcotics agents arrest suspected cartel member in Oklahoma City". Newsok.com. June 29, 2010. Archived from the original on May 15, 2012. Retrieved February 15, 2012.*
87. **^** *Stover, Jean (2009). Sirloin Stockade Slaughter: Murder on the Run. Durham, Connecticut: Eloquent Books. ISBN 978-1-60860-924-6.*
88. **^** *"Fortune 500 2014:Devon Energy Corporation". Forbes. Archived from the original on November 29, 2014. Retrieved November 29, 2014.*

89. ^ *"Love's Travel Stops & Country Stores". Forbes. October 2014. Archived from the original on October 19, 2014. Retrieved November 29, 2014.*
90. ^ *"Greater Oklahoma City Economic Development | Greater Oklahoma City Economic Development". www.greateroklahomacity.com. Archived from the original on April 19, 2024. Retrieved April 19, 2024.*
91. ^ ***a b*** *"Oklahoma City MSA Major Employer List". Greater Oklahoma City. July 2014. Archived from the original on November 29, 2014. Retrieved November 29, 2014.*
92. ^ "Oklahoma City: Economy, City-Data.com. Retrieved January 26, 2010.
93. ^ *Monies, Paul (August 2, 2007). "City area enjoys increase in jobs". NewsOK. Archived from the original on September 26, 2012. Retrieved May 1, 2010.*
94. ^ *"Gross Domestic Product by Metropolitan Area, 2016". BEA. Archived from the original on July 27, 2018.*
95. ^ *"U.S. Metro Economies - Analysis: Metro Economies since 2009 - GMP and Employment Report: 2015-2017" (PDF). United States Conference of Mayors. IHS Global Insight. Archived from the original (PDF) on September 18, 2016. Retrieved October 2, 2016.*
96. ^ *Zumbrun, Joshua (April 29, 2008). "America's Recession-Proof Cities". Forbes. Archived from the original on June 10, 2023.*
97. ^ *"OKC Tourism Study Reveals Record-breaking Economic Impact". Visit OKC. August 9, 2023. Archived from the original on November 7, 2023.*
98. ^ *"Business Improvement Districts". The City of Oklahoma City. Archived from the original on December 18, 2014. Retrieved November 29, 2014.*
99. ^ *"Special Zoning District Map" (PDF). City of Oklahoma City. Archived from the original (PDF) on December 18, 2014. Retrieved November 29, 2014.*
100. ^ *"Dale Chihuly: The Exhibition | Oklahoma City Museum of Art". Archived from the original on April 5, 2008.*
101. ^ *Hayes, Jana (May 11, 2023). "Indiana Bones, Oklahoma Museum of Osteology's cat, now a TikTok celeb". The Oklahoman. Retrieved January 28, 2024.*
102. ^ *"National Cowboy and Western Heritage Museum Reviews". U.S. News Travel. January 1, 1970. Retrieved January 28, 2024.*
103. ^ *Smith, Cory (April 11, 2022). "Kurt Russell in Oklahoma for induction in Hall of Great Western Performers". KOKH. Retrieved January 28, 2024.*
104. ^ *Rieger, Andy (March 4, 2014). "A New Museum for First Americans". The National Endowment for the Humanities. Retrieved January 28, 2024.*
105. ^ *Tonkins, Sam (February 6, 2019). "American Banjo Museum in OKC provides visitors with history, artistic insight". OU Daily. Retrieved January 28, 2024.*
106. ^ *Bond, Carol Mowdy (February 6, 2015). "Oklahoma Magazine". Oklahoma. Retrieved January 28, 2024.*
107. ^ *Painter, Bryan (September 6, 2009). "Oklahoma City museum honors firefighters' valor". The Oklahoman. Retrieved January 28, 2024.*

108. ^ ***a b*** *Castrodale, Jelisa (February 17, 2022). "The James Beard Foundation Just Named These Restaurants 'America's Classics'". Food & Wine. Archived from the original on February 26, 2023. Retrieved February 27, 2023.*
109. **^** *Watts, James D. Jr (February 24, 2022). "Tulsa chefs, restaurants and bars up for James Beard Awards". Tulsa World. Retrieved February 27, 2023.*
110. **^** *Williams, JaNae (February 25, 2023). "32 Black-owned food businesses in the OKC metro area that will have you coming back for more". The Oklahoman. Retrieved February 27, 2023.*
111. **^** *Brown, Forrest; Hunter, Marnie (June 6, 2023). "These chefs and restaurants are 2023's James Beard Award winners". CNN. Retrieved June 6, 2023.*
112. **^** *Martichoux, Alix (November 25, 2023). "Guy Fieri loved these Oklahoma spots on 'Diners, Drive-Ins and Dives.' How many have you tried?". Yahoo. Archived from the original on July 9, 2024. Retrieved July 9, 2024.*
113. **^** Michael Davis in *Chickasaw Bricktown Ballpark-Oklahoma City Dodgers* 29 September 2019
114. **^** *"Archived copy" (PDF). Archived from the original (PDF) on August 6, 2015. Retrieved September 1, 2015.*cite web: CS1 maint: archived copy as title (link)
115. **^** *"Oklahoma City to host softball, canoe slalom during the 2028 Los Angeles Games". NBC News. June 22, 2024. Retrieved August 11, 2024.*
116. **^** *Couch, James D. "Council Agenda Item No. VIII. I. April 26, 2005" (PDF). Memorandum. The City of Oklahoma City. Archived from the original (PDF) on October 29, 2013. Retrieved July 23, 2012.*
117. **^** "Mayor and Council", Archived February 1, 2015, at the Wayback Machine" City of Oklahoma City. Retrieved January 27, 2010.
118. **^** *"About Mayor Holt". City of Oklahoma City. April 10, 2018. Archived from the original on April 11, 2018. Retrieved April 10, 2018.*
119. **^** *"Craig Freeman sworn in as Oklahoma City Manager. News Releases | City of OKC". Okc.gov. January 2, 2019. Retrieved January 16, 2019.*
120. **^** Oklahoma City responds to David Slane's challenge of MAPS-3, KOKH-TV, September 3, 2013.
121. **^** *"Voter registration as of November 1, 2020 by county" (PDF). Archived from the original (PDF) on December 13, 2020. Retrieved December 14, 2020.*
122. **^** *"Guatemala opens consulate in Oklahoma to serve a growing population". The Oklahoman. June 20, 2017.*
123. **^** *"New consulate in Oklahoma City will serve 'vibrant Mexican community' in Oklahoma". The Oklahoman. May 22, 2023.*
124. **^** *"Our Cities". sistercitiesokc.org. Sister Cities OKC, Inc. Retrieved May 6, 2021.*
125. **^** *"Ã†Ã†â€™Ã†â€šÃ‚Â¤Ã†Ã¢â‚¬Å¡Ã†â€šÃ‚Â¸Ã†Ã¢â‚¬Å¡Ã†â€šÃ‚-Ã†Ã†â€™Ã†â€šÃ‚¥Ã†Ã‚Â¢Ã†Â¢Ã¢â‚¬Å¡Ã‚Â¬Ã†â€šÃ‚ºÃ†Ã¢â‚¬Å¡Ã‚½ Ã†Ã†â€™Ã†â€šÃ‚¤Ã†Ã¢â‚¬Å¡Ã†â€šÃ‚¸Ã†Ã¢â‚¬Å¡Ã†â€šÃ‚-Ã†Ã†â€™Ã†â€šÃ‚¥Ã†Ã‚Â¢Ã†Â¢Ã¢â‚¬Å¡Ã‚Â¬Ã†â€šÃ‚ºÃ†Ã¢â‚¬Å¡Ã‚½ Ã†Ã†â€™Ã†â€šÃ‚¤Ã†Ã¢â‚¬Å¡Ã†â€šÃ‚¸Ã†Ã¢â‚¬Å¡Ã†â€šÃ‚-Ã†Ã†â€™Ã†â€šÃ‚¥Ã†Ã‚Â¢Ã†Â¢Ã¢â‚¬Å¡Ã‚Â¬Ã†â€šÃ‚ºÃ†Ã¢â‚¬Å¡Ã‚½*

Oumedical.com. Archived from the original on September 24, 2001.
126. **^** *"University Profile". Oc.edu.*
127. **^** *"(OKC) District's enrollment growth a tale of demographic shifts". Daily Oklahoman. November 6, 2009. Archived from the original (ASP) on June 14, 2011. Retrieved November 6, 2009.*
128. ^ ***a b*** *"2020 CENSUS - SCHOOL DISTRICT REFERENCE MAP: Oklahoma County, OK" (PDF). U.S. Census Bureau. Retrieved January 28, 2024.*
129. **^** The Top of the Class 2008, *Newsweek*, May 17, 2008. (Retrieved April 28, 2010).
130. **^** Belle Isle Enterprise Middle School (Retrieved January 26, 2010). Archived September 5, 2008, at the Wayback Machine
131. **^** *"2020 CENSUS - SCHOOL DISTRICT REFERENCE MAP: Cleveland County, OK" (PDF). U.S. Census Bureau. Retrieved January 28, 2024.* - Text list
132. **^** *"2020 CENSUS - SCHOOL DISTRICT REFERENCE MAP: Canadian County, OK" (PDF). U.S. Census Bureau. pp. 4, 7–8, 11-12 (PDF p. 5, 8–9, 12-13/13). Retrieved January 28, 2024.* - Text list
133. **^** *"About 405 Magazine". 405 Magazine. Retrieved March 15, 2020.*
134. ^ ***a b*** Oklahoma Fast Facts and Trivia Archived April 21, 2009, at the Wayback Machine. Retrieved January 26, 2009.
135. **^** City of Oklahoma City | Fire Department. Okc.gov. Retrieved on July 21, 2013.
136. **^** City of Oklahoma City | Fire Department Archived May 26, 2013, at the Wayback Machine. Okc.gov. Retrieved on July 21, 2013.
137. **^** *"Archived copy" (PDF). Archived from the original (PDF) on November 13, 2013 . Retrieved July 12, 2013.*cite web: CS1 maint: archived copy as title (link)
138. **^** *"Metro Areas" (PDF). odot.org. 2018.*
139. **^** "Wiley Post", Archived October 8, 2012, at the Wayback Machine, U.S. Centennial of Flight Commission. Retrieved February 1, 2010.
140. **^** Current Statistics, Will Rogers World Airport . Retrieved January 12, 2018.
141. **^** 'Official Guide of the Railways,' 1949 Index of Stations
142. **^** Oklahoma Fixed Guideway Study Archived June 5, 2010, at the Wayback Machine (Retrieved April 21, 2010)
143. **^** *Crum, William (February 8, 2017). "Streetcar work begins in Bricktown". The Oklahoman. Retrieved February 8, 2017.*[*permanent dead link*]
144. **^** *Crum, William (December 14, 2018). "Lines form to catch first rides on the Oklahoma City streetcar". The Oklahoman. GateHouse Media Inc. Retrieved December 14, 2018.*
145. **^** *"OKC Streetcar service begins" (Press release). City of Oklahoma City. December 14, 2018. Retrieved December 14, 2018.*
146. **^** *"2011 City and Neighborhood Rankings". Walk Score. 2011. Retrieved August 28, 2011.*
147. **^** *"Trauma Centers". American College of Surgeons. Archived from the original on July 7, 2014. Retrieved September 16, 2013.*
148. **^** INTEGRIS Cancer Institute of Oklahoma.

149. ^ *Stogner, Todd. "Oklahoma Hospital, Health Center & Clinic Locations – INTEGRIS OK". Integrisok.com.*
150. ^ *"ACSM American Fitness Index Ranks 50 Largest Metro Areas on Health And Community Fitness". ACSM. May 26, 2009. Archived from the original on July 5, 2010. Retrieved May 26, 2010.*
151. ^ *"Oklahoma City, OK MSA 2010 AFI Report" (PDF). AFI. Archived from the original (PDF) on August 15, 2011. Retrieved May 26, 2010.*

External links

[edit]

Wikimedia Commons has media related to ***Oklahoma City***.

Oklahoma City, Oklahoma at Wikipedia's sister projects


- Definitions from Wiktionary


- Media from Commons


- News from Wikinews


- Quotations from Wikiquote


- Texts from Wikisource


- Textbooks from Wikibooks


- Resources from Wikiversity


- Travel information from Wikivoyage
- Official city website
- Oklahoma City tourism information
- Convention & Visitors' Bureau
- City-Data page
- Oklahoma City Historic Film Row District website Archived March 11, 2018, at the Wayback Machine
- *New York Times* travel article about Oklahoma City
- OKC.NET cultural commentary about Oklahoma City
- Voices of Oklahoma interview with Ron Norick Archived April 25, 2010, at the Wayback Machine, mayor during the Oklahoma City bombing

- v
- t
- e

City of Oklahoma City

- Bombing
- Climate
- Education
- Government
- People
- History
- Timeline
- Mayors
- Media
- Transportation
  - Streetcar

Districts	○ Adventure District ○ Asia District ○ Capitol Hill ○ Downtown ○ Eastside ○ Midtown ○ Paseo ○ 39th Street ○ Uptown ○ Western Avenue
Professional sports teams	○ Oklahoma City Thunder ○ Oklahoma City Blue ○ Oklahoma City Comets ○ Oklahoma City Energy FC ○ Oklahoma City Spark

- Image not found or type unknown Category
- Metro area
- State of Oklahoma

Articles relating to Oklahoma City

- v
- t
- e

Municipalities of the Greater Oklahoma City metropolitan area

Population over 500,000	○ Oklahoma City

Population over 100,000	○ Norman
Population over 50,000	○ Edmond ○ Midwest City ○ Moore
Population over 20,000	○ Bethany ○ Del City ○ Mustang ○ Shawnee ○ Yukon
Population over 10,000	○ Chickasha ○ Choctaw ○ El Reno ○ Guthrie ○ Newcastle ○ Warr Acres
Population over 5,000	○ Blanchard ○ Harrah ○ Noble ○ Piedmont ○ Purcell ○ Tecumseh ○ Tuttle ○ The Village
Population over 2,000	○ Bethel Acres ○ Chandler ○ Goldsby ○ Jones ○ Lexington ○ McLoud ○ Nichols Hills ○ Nicoma Park ○ Pink ○ Prague ○ Slaughterville ○ Spencer ○ Stroud

Population over 1,000	○ Crescent ○ Forest Park ○ Langston ○ Luther ○ Maud ○ Meeker ○ Minco ○ Ninnekah ○ Okarche ○ Rush Springs ○ Union City
Population over 500	○ Carney ○ Cashion ○ Cole ○ Davenport ○ Dibble ○ Earlsboro ○ Valley Brook ○ Verden ○ Washington ○ Wayne ○ Wellston
Population over 200	○ Alex ○ Agra ○ Amber ○ Asher ○ Bridge Creek ○ Byars ○ Calumet ○ Cedar Valley ○ Coyle ○ Johnson ○ Marshall ○ Mulhall ○ Tribbey ○ Tryon ○ Wanette

Population under 200	○ Arcadia ○ Bradley ○ Brooksville ○ Cimarron City ○ Etowah ○ Fallis ○ Kendrick ○ Lake Aluma ○ Macomb ○ Meridian ○ Norge ○ Orlando ○ Pocasset ○ Rosedale ○ Smith Village ○ Sparks ○ St. Louis ○ Warwick ○ Woodlawn Park
Counties	○ Canadian ○ Cleveland ○ Grady ○ Logan ○ Lincoln ○ McClain ○ Oklahoma ○ Pottawatomie
Metropolitan planning organization	○ Association of Central Oklahoma Governments

○ v
○ t
○ e

Skyscrapers in Oklahoma City

Current	○ Devon Energy Center ○ BancFirst Tower ○ First National Center ○ City Place ○ Oklahoma Tower ○ BOK Park Plaza ○ Strata Tower ○ Valliance Bank Tower ○ Bank of Oklahoma Plaza ○ Leadership Square ○ Regency Tower ○ Founders Tower ○ Mid America Tower ○ Union Plaza ○ The Classen ○ Dowell Center ○ 101 Park Avenue Building ○ 100 Park Avenue Building ○ Colcord Hotel ○ 50 Penn Place ○ Skirvin Hilton Hotel ○ Oklahoma County Courthouse
See also	○ List of tallest buildings in Oklahoma City

- v
- t
- e

State of Oklahoma

Oklahoma City (capital)

Topics

- Index
- Climate change
- Earthquakes
- Geography
- Government
  - governor (list)
- History
  - Land Rush of 1889, 1891, 1892, 1893, and 1895
  - Unassigned Lands
- Mass media
  - newspapers
  - radio
  - TV
- People
- Sports
- Symbols
- Tourist attractions

Society

- Abortion
- Cannabis
- Culture
- Crime
- Demographics
- Economy
- Education
- Gun laws
- LGBT rights
- Politics

Regions	○ Arklatex ○ Central ○ Cherokee Outlet ○ Choctaw Country ○ Cross Timbers ○ Four State Area ○ Flint Hills ○ Green Country ○ Little Dixie ○ Northwestern ○ Oklahoma City Metro ○ Ouachita Mountains ○ The Ozarks ○ Panhandle ○ South Central ○ Southwestern ○ Texoma ○ Tulsa Metro ○ Western
Largest cities	○ Ardmore ○ Bartlesville ○ Bixby ○ Broken Arrow ○ Del City ○ Duncan ○ Edmond ○ Enid ○ Lawton ○ Midwest City ○ Muskogee ○ Moore ○ Norman ○ Oklahoma City ○ Owasso ○ Ponca City ○ Shawnee ○ Stillwater ○ Tulsa ○ Yukon

Counties	○ Adair ○ Alfalfa ○ Atoka ○ Beaver ○ Beckham ○ Blaine ○ Bryan ○ Caddo ○ Canadian ○ Carter ○ Cherokee ○ Choctaw ○ Cimarron ○ Cleveland ○ Coal ○ Comanche ○ Cotton ○ Craig ○ Creek ○ Custer ○ Delaware ○ Dewey ○ Ellis ○ Garfield ○ Garvin ○ Grady ○ Grant ○ Greer ○ Harmon ○ Harper ○ Haskell ○ Hughes ○ Jackson ○ Jefferson ○ Johnston ○ Kay ○ Kingfisher ○ Kiowa ○ Latimer ○ Le Flore ○ Lincoln ○ Logan ○ Love ○ Major ○ Marshall ○ Mayes ○ McClain ○ McCurtain

flag Oklahoma portal

- v
- t
- e

Municipalities and communities of Canadian County, Oklahoma, United States

County seat: **El Reno**

Cities	○ El Reno ○ Geary‡ ○ Mustang ○ Oklahoma City‡ ○ Piedmont‡ ○ Yukon
Towns	○ Calumet ○ Okarche‡ ○ Union City
CDP	○ Cedar Lake
Other communities	○ Concho ○ Scott‡
Footnotes	‡This populated place also has portions in an adjacent county or counties

Image not found or type unknown

Canadian County map

- Oklahoma portal
- United States portal

- v
- t
- e

Municipalities and communities of Cleveland County, Oklahoma, United States

County seat: **Norman**

Cities	○ Lexington ○ Moore ○ Noble ○ Norman ○ Oklahoma City‡ ○ Purcell‡

Image not found or type unknown

Cleveland County map

Towns	○ Etowah ○ Slaughterville
Neighborhood	○ Hall Park
Footnotes	‡This populated place also has portions in an adjacent county or counties

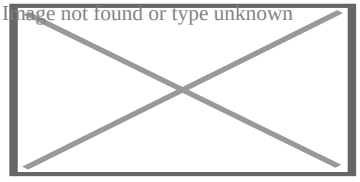
- Oklahoma portal
- United States portal

- v
- t
- e

Municipalities and communities of Oklahoma County, Oklahoma, United States

County seat: **Oklahoma City**

Cities	○ Bethany ○ Choctaw ○ Del City ○ Edmond ○ Harrah ○ Midwest City ○ Nichols Hills ○ Nicoma Park ○ Oklahoma City‡ ○ Spencer ○ The Village ○ Warr Acres
Towns	○ Arcadia ○ Forest Park ○ Jones ○ Lake Aluma ○ Luther ○ Smith Village ○ Valley Brook ○ Woodlawn Park
Unincorporated communities	○ Britton ○ Crutcho ○ Newalla ○ Wheatland



Oklahoma County map

Footnotes	‡This populated place also has portions in an adjacent county or counties

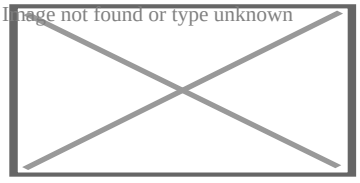
- Oklahoma portal
- United States portal

- v
- t
- e

Municipalities and communities of Pottawatomie County, Oklahoma, United States

County seat: **Shawnee**

Cities	○ Maud‡ ○ Oklahoma City‡ ○ Shawnee ○ Tecumseh
Towns	○ Asher ○ Bethel Acres ○ Brooksville ○ Earlsboro ○ Johnson ○ Macomb ○ McLoud ○ Pink ○ St. Louis ○ Tribbey ○ Wanette
CDP	○ Dale
Other communities	○ Aydelotte ○ Bellemont ○ Centerview ○ Garden Grove ○ Harjo ○ Pearson ○ Romulus ○ Sacred Heart ○ Trousdale
Ghost towns	○ Avoca ○ Keokuk Falls



Pottawatomie County map

Footnotes

‡This populated place also has portions in an adjacent county or counties

- Oklahoma portal
- United States portal

- v
- t
- e

Capitals of the United States by jurisdiction

Nation:

- **US** Washington, D.C.

States:

- **AL** Montgomery
- **AK** Juneau
- **AZ** Phoenix
- **AR** Little Rock
- **CA** Sacramento
- **CO** Denver
- **CT** Hartford
- **DE** Dover
- **FL** Tallahassee
- **GA** Atlanta
- **HI** Honolulu
- **ID** Boise
- **IL** Springfield
- **IN** Indianapolis
- **IA** Des Moines
- **KS** Topeka
- **KY** Frankfort
- **LA** Baton Rouge
- **ME** Augusta
- **MD** Annapolis
- **MA** Boston
- **MI** Lansing
- **MN** Saint Paul
- **MS** Jackson
- **MO** Jefferson City
- **MT** Helena
- **NE** Lincoln
- **NV** Carson City
- **NH** Concord
- **NJ** Trenton
- **NM** Santa Fe
- **NY** Albany
- **NC** Raleigh
- **ND** Bismarck
- **OH** Columbus
- **OK** Oklahoma City
- **OR** Salem
- **PA** Harrisburg
- **RI** Providence
- **SC** Columbia
- **SD** Pierre

- v
- t
- e

County seats in Oklahoma

- Ada
- Altus
- Alva
- Anadarko
- Antlers
- Arapaho
- Ardmore
- Arnett
- Atoka
- Bartlesville
- Beaver
- Boise City
- Buffalo
- Chandler
- Cherokee
- Cheyenne
- Chickasha
- Claremore
- Coalgate
- Duncan
- Durant
- El Reno
- Enid
- Eufaula
- Fairview
- Frederick
- Guthrie
- Guymon
- Hobart
- Holdenville
- Hollis
- Hugo
- Idabel
- Jay
- Kingfisher
- Lawton
- Madill
- Mangum
- Marietta
- McAlester
- Medford
- Miami
- Muskogee
- New Cordell
- Newkirk
- Norman
- Nowata
- Okemah

- v
- t
- e

The 100 most populous cities of the United States

1. New York, New York
2. Los Angeles, California
3. Chicago, Illinois
4. Houston, Texas
5. Phoenix, Arizona
6. Philadelphia, Pennsylvania
7. San Antonio, Texas
8. Dallas, Texas
9. San Diego, California
10. Austin, Texas
11. Jacksonville, Florida
12. San Jose, California
13. Fort Worth, Texas
14. Columbus, Ohio
15. Charlotte, North Carolina
16. Indianapolis, Indiana
17. San Francisco, California
18. Seattle, Washington
19. Denver, Colorado
20. Oklahoma City, Oklahoma
21. Nashville, Tennessee
22. El Paso, Texas
23. Washington, D.C.
24. Las Vegas, Nevada
25. Boston, Massachusetts
26. Portland, Oregon
27. Louisville, Kentucky
28. Memphis, Tennessee
29. Detroit, Michigan
30. Baltimore, Maryland
31. Milwaukee, Wisconsin
32. Albuquerque, New Mexico
33. Tucson, Arizona
34. Fresno, California
35. Sacramento, California
36. Mesa, Arizona
37. Kansas City, Missouri
38. Atlanta, Georgia
39. Colorado Springs, Colorado
40. Omaha, Nebraska
41. Raleigh, North Carolina
42. Virginia Beach, Virginia
43. Long Beach, California
44. Miami, Florida
45. Oakland, California
46. Minneapolis, Minnesota
47. Tulsa, Oklahoma
48. Bakersfield, California
49. Tampa, Florida
50. Arlington, Texas
51. Aurora, Colorado
52. New Orleans, Louisiana
53. Cleveland, Ohio
54. Anaheim, California
55. Honolulu, Hawaii
56. Henderson, Nevada
57. Stockton, California
58. Riverside, California
59. Lexington, Kentucky
60. Corpus Christi, Texas
61. Orlando, Florida
62. Irvine, California
63. Cincinnati, Ohio
64. Santa Ana, California
65. Newark, New Jersey
66. Saint Paul, Minnesota
67. Pittsburgh, Pennsylvania
68. Greensboro, North Carolina
69. Lincoln, Nebraska
70. Durham, North Carolina
71. Plano, Texas
72. Anchorage, Alaska
73. Chandler, Arizona
74. North Las Vegas, Nevada
75. Chula Vista, California
76. Buffalo, New York
77. Gilbert, Arizona
78. Reno, Nevada
79. Madison, Wisconsin
80. Fort Wayne, Indiana
81. Toledo, Ohio
82. Lubbock, Texas
83. St. Petersburg, Florida
84. Laredo, Texas
85. Irving, Texas
86. Chesapeake, Virginia
87. Glendale, Arizona
88. Winston-Salem, North Carolina
89. Scottsdale, Arizona
90. Garland, Texas
91. Boise, Idaho
92. Norfolk, Virginia
93. Port St. Lucie, Florida
94. Spokane, Washington
95. Richmond, Virginia
96. Fremont, California
97. Huntsville, Alabama
98. Modesto, California
99. Santa Clarita, California
100. Glendale, California

Cities ranked by United States Census Bureau population estimates for July 1, 2022.

Authority control databases	Image not found or type unknown Edit this at Wikidata
International	○ VIAF ○ FAST ○ WorldCat
National	○ Germany ○ United States ○ France ○ BnF data ○ Czech Republic ○ Croatia ○ Israel
Geographic	○ MusicBrainz area
Other	○ IdRef ○ NARA

About Durham Supply Inc

Photo

Image not found or type unknown
Photo

Image not found or type unknown
Photo

Image not found or type unknown
Photo

Image not found or type unknown
Photo

Image not found or type unknown

Things To Do in Tulsa County

Photo

The Tulsa Arts District

4.7 (22)

Photo

Image not found or type unknown

Golden Driller Statue

4.6 (1935)

Photo

Image not found or type unknown

The Cave House

4.6 (249)

Photo

Gathering Place

4.8 (12116)

Photo

Image not found or type unknown

OkieTundra

4.5 (84)

Photo

Image not found or type unknown

Tulsa Zoo

4.5 (10482)

Driving Directions in Tulsa County

Driving Directions From East Central High School to Durham Supply Inc

Driving Directions From Country Inn & Suites by Radisson, Tulsa, OK to Durham Supply Inc

Driving Directions From OYO Hotel Tulsa International Airport to Durham Supply Inc

Driving Directions From Waffle House to Durham Supply Inc

Driving Directions From Nights Stay Hotel to Durham Supply Inc

Driving Directions From Tuff Shed Tulsa to Durham Supply Inc

**https://www.google.com/maps/dir/East+Central+High+School/Durham+Supply+Inc/@36
95.8408342,14z/data=!3m1!4b1!4m14!4m13!1m5!1m1!1sChIJbfy5OhTztocRESrikT-
8VvU!2m2!1d-
95.8408342!2d36.1468751!1m5!1m1!1sChIJDzPLSIrytocRY_EaORpHGro!2m2!1d-
95.8384781!2d36.1563128!3e0**

**https://www.google.com/maps/dir/Country+Inn+%26+Suites+by+Radisson%2C+Tulsa%
95.8518718,14z/data=!3m1!4b1!4m14!4m13!1m5!1m1!1sChIJs1WK-
qvztocRWQSiVmJF8_4!2m2!1d-
95.8518718!2d36.1686628!1m5!1m1!1sChIJDzPLSIrytocRY_EaORpHGro!2m2!1d-
95.8384781!2d36.1563128!3e2**

**https://www.google.com/maps/dir/Oakwood+Homes/Durham+Supply+Inc/@36.157059,-
95.836308,14z/data=!3m1!4b1!4m14!4m13!1m5!1m1!1sChIJbexf2QzztocRV_e5kJ6lxHo!2
95.836308!2d36.157059!1m5!1m1!1sChIJDzPLSIrytocRY_EaORpHGro!2m2!1d-
95.8384781!2d36.1563128!3e1**

**https://www.google.com/maps/dir/Dollar+General/Durham+Supply+Inc/@36.1475704,-
95.8563627,14z/data=!3m1!4b1!4m14!4m13!1m5!1m1!1sChIJY7A5TRnztocRxqXsWHcgE
95.8563627!2d36.1475704!1m5!1m1!1sChIJDzPLSIrytocRY_EaORpHGro!2m2!1d-
95.8384781!2d36.1563128!3e3**

https://www.google.com/maps/dir/Tulsa/Durham+Supply+Inc/@36.1539816,-95.992775,14z/data=!3m1!4b1!4m14!4m13!1m5!1m1!1sChIJjy7R3biStocR92rZG8gQaec!2m2!1d-95.992775!2d36.1539816!1m5!1m1!1sChIJDzPLSIrytocRY_EaORpHGro!2m2!1d-95.8384781!2d36.1563128!3e0

https://www.google.com/maps/dir/Waffle+House/Durham+Supply+Inc/@36.1476086,-95.8594751,14z/data=!3m1!4b1!4m14!4m13!1m5!1m1!1sChIJqzYK0uPytocRD8iS8Cpplk8!2m2!1d-95.8594751!2d36.1476086!1m5!1m1!1sChIJDzPLSIrytocRY_EaORpHGro!2m2!1d-95.8384781!2d36.1563128!3e2

Driving Directions From The Blue Dome to Durham Supply Inc

Driving Directions From Tulsa Botanic Garden to Durham Supply Inc

Driving Directions From Oxley Nature Center to Durham Supply Inc

Driving Directions From The Tulsa Arts District to Durham Supply Inc

Driving Directions From The Outsiders House Museum to Durham Supply Inc

Driving Directions From OkieTundra to Durham Supply Inc

https://www.google.com/maps/dir/Golden+Driller+Statue/Durham+Supply+Inc/@36.1337-95.9311081,14z/data=!3m1!4b1!4m14!4m13!1m5!1m1!1sunknown!2m2!1d-95.9311081!2d36.1337734!1m5!1m1!1sChIJDzPLSIrytocRY_EaORpHGro!2m2!1d-95.8384781!2d36.1563128!3e0

https://www.google.com/maps/dir/Gathering+Place/Durham+Supply+Inc/@36.1251603,-95.9840207,14z/data=!3m1!4b1!4m14!4m13!1m5!1m1!1sunknown!2m2!1d-95.9840207!2d36.1251603!1m5!1m1!1sChIJDzPLSIrytocRY_EaORpHGro!2m2!1d-95.8384781!2d36.1563128!3e2

https://www.google.com/maps/dir/Streetwalker+Tours/Durham+Supply+Inc/@36.1522464,-95.9886238,14z/data=!3m1!4b1!4m14!4m13!1m5!1m1!1sunknown!2m2!1d-95.9886238!2d36.1522464!1m5!1m1!1sChIJDzPLSIrytocRY_EaORpHGro!2m2!1d-95.8384781!2d36.1563128!3e1

https://www.google.com/maps/dir/Streetwalker+Tours/Durham+Supply+Inc/@36.1522464,-95.9886238,14z/data=!3m1!4b1!4m14!4m13!1m5!1m1!1sunknown!2m2!1d-95.9886238!2d36.1522464!1m5!1m1!1sChIJDzPLSIrytocRY_EaORpHGro!2m2!1d-95.8384781!2d36.1563128!3e3

Reviews for Durham Supply Inc

Durham Supply Inc

Image not found or type unknown

B Mann

(5)

I was in need of some items for a double wide that I am remodeling and this place is the only place in town that had what I needed (I didn't even try the other rude place)while I was there I learned the other place that was in Tulsa that also sold mobile home supplies went out of business (no wonder the last time I was in there they were VERY RUDE and high priced) I like the way Dunham does business they answered all my questions and got me the supplies I needed, very friendly, I will be back to purchase the rest of my items when the time comes.

Durham Supply Inc

Image not found or type unknown

Dennis Champion

(5)

Durham supply and Royal supply seems to find the most helpful and friendly people to work in their stores, we are based out of Kansas City out here for a few remodels and these guys treated us like we've gone there for years.

Durham Supply Inc

Image not found or type unknown

Gerald Clifford Brewster

(5)

We will see, the storm door I bought says on the tag it's 36x80, but it's 34x80. If they return it.....they had no problems returning it. And it was no fault of there's, you measure a mobile home door different than a standard door!

Durham Supply Inc

Image not found or type unknown

Ethel Schiller

(5)

This place is really neat, if they don't have it they can order it from another of their stores and have it there overnight in most cases. Even hard to find items for a trailer! I definitely recommend this place to everyone! O and the prices is awesome too!

Durham Supply Inc

Image not found or type unknown

Ty Spears

(5)

Bought a door/storm door combo. Turns out it was the wrong size. They swapped it out, quick and easy no problems. Very helpful in explaining the size differences from standard door sizes.

Converting Older Units to High Efficiency Models**View GBP**

Check our other pages :

- **Following OSHA Standards During Mobile Home AC Installations**
- **Coordinating Expert Consultations for Complex Projects**
- **Coordinating Exit Strategies for Emergencies in Mobile Home HVAC Work**
- **Identifying Warning Signs of Outdated Components**

Frequently Asked Questions

What are the benefits of converting an older mobile home HVAC system to a high-efficiency model?

Converting to a high-efficiency HVAC model can lead to significant energy savings, lower utility bills, improved indoor air quality, reduced environmental impact due to lower energy

consumption, and enhanced comfort through better temperature regulation.

What factors should be considered when choosing a high-efficiency HVAC system for a mobile home?

Key factors include the size and insulation of the mobile home, climate region, energy efficiency ratings (such as SEER for cooling systems), compatibility with existing ductwork or space constraints, initial cost versus long-term savings, and available rebates or incentives.

How does one determine if an existing mobile home HVAC system needs upgrading?

Indications for upgrading include frequent repairs, inconsistent temperatures throughout the home, rising utility bills without increased usage, outdated technology (typically over 10-15 years old), loud noise during operation, and inability to maintain desired comfort levels.

Royal Supply Inc

Phone : +16362969959

City : Oklahoma City

State : OK

Zip : 73149

Address : Unknown Address

Google Business Profile

Company Website : **https://royal-durhamsupply.com/locations/oklahoma-city-oklahoma/**

Sitemap

Privacy Policy

About Us

Follow us