DATA AND TREND ANALYSIS

Environmental Health

Humans interact with the environment constantly. These interactions affect quality of life, years of healthy life lived, and health differences among racial and cultural groups. Environment, as it relates to health, is all the physical, chemical, and biological factors external to a person, and all the related behaviors. Environmental health consists of preventing or controlling disease, injury, and disability related to the interactions between people and their environment.

Air Quality

DESCRIPTION

Poor air quality can affect lung and heart health. Scientific studies have shown that exposure to poor air quality can lead to a sore throat, persistent cough, burning eyes, wheezing, shortness of breath or chest pain. Elevated pollution levels can also trigger asthma attacks, hospital admissions and emergency room visits, heart attacks, and premature death.[1]

The Air Quality Index, or AQI, was developed by the U.S. Environmental Protection Agency (EPA) to provide a simple, uniform way to report daily air quality conditions. Minnesota AQI numbers are determined by hourly measurements of five pollutants: fine particles (PM2.5), ground-level ozone (O3), sulfur dioxide (SO2), nitrogen dioxide (NO2), and carbon monoxide (CO). The pollutant with the highest AQI value determines the overall AQI for that hour; fine particles and ozone are the primary pollutants causing air alerts.[2]

The Minnesota Pollution Control Agency (MPCA) uses hourly air pollution monitoring results and daily air quality forecasts to determine whether air pollution concentrations have reached air quality alert levels. An air quality alert is issued when measured or forecasted air quality conditions are expected to result in an AQI of 101 or higher, meaning that adverse health effects can be expected for populations that are sensitive to air pollution.[3]

HOW WE ARE DOING

The number of good AQI days has been increasing over time while the number of moderate and higher days has been decreasing. The number of "unhealthy for sensitive groups" and "unhealthy" days is more variable, as it is driven by differences in weather conditions that affect air quality. Ramsey County in 2016 had two total "unhealthy" days. In the Twin Cities for 2015, there were seven alert days for AQI.

The number of AQI days in each category varies by region of the state. Typically, areas in the northern half of the state have the highest number of good days. The Twin Cities routinely has the fewest number of good days, due in part to the density of air pollution sources such as cars, trucks, homes, and industry in the metropolitan area.[4]

The number of air alert days per year across Minnesota has generally been declining over time (the slight increase noted for 2015 was primarily due to increased wildfire activity). On most days, air quality across Minnesota is healthy to breathe, but on some days each year the air can reach unhealthy levels.[5]

BENCHMARK INDICATOR

Healthy People 2020: Reduce the number of days the Air Quality Index (AQI) exceeds 100.

U.S. Target: 10% improvement.

DISPARITIES

Air pollution disproportionately impacts the health of some communities. Areas with higher concentrations of people living in poverty and people of color tend to experience higher levels of air pollution than those in predominantly white and higher-income areas, and are

[1] About air quality data. Health effects associated with poor air quality. Minnesota Pollution Control Agency. https://www.pca.state.mn.us/air/about-air-quality-data. Accessed January 16, 2018.
[2] About air quality data. AQI monitor locations. Minnesota Pollution Control Agency. https://www.pca.state.mn.us/air/current-condition-details. Accessed January 16, 2018.
[3] About air quality data. Issuing Air Quality Alerts. Minnesota Pollution Control Agency. https://www.pca.state.mn.us/air/about-air-quality-data. Accessed January 16, 2018.
[4] Annual AQI summary reports. Minnesota Pollution Control Agency. https://www.pca.state.mn.us/air/annual-aqi-summary-reports. Accessed January 16, 2018.
[5] Air Quality Index: facts and figures. Minnesota Department of Health. https://apps.health.state.mn.us/mndata/air_aqi. Accessed January 16, 2018.

Information to note

- Overall, the number of good air quality days in Ramsey County is increasing.
- The Twin Cities routinely has the fewest number of good air quality days, compared to other regions of the state.
- An air quality alert is issued when the AQI exceeds 100.

Community voice

"Pollution in the air, smoking."
- White Female, age 10-24

509 respondents mentioned the physical environment as a factor that influenced their health. Of these, 68 mentioned the adverse effects of air pollution.

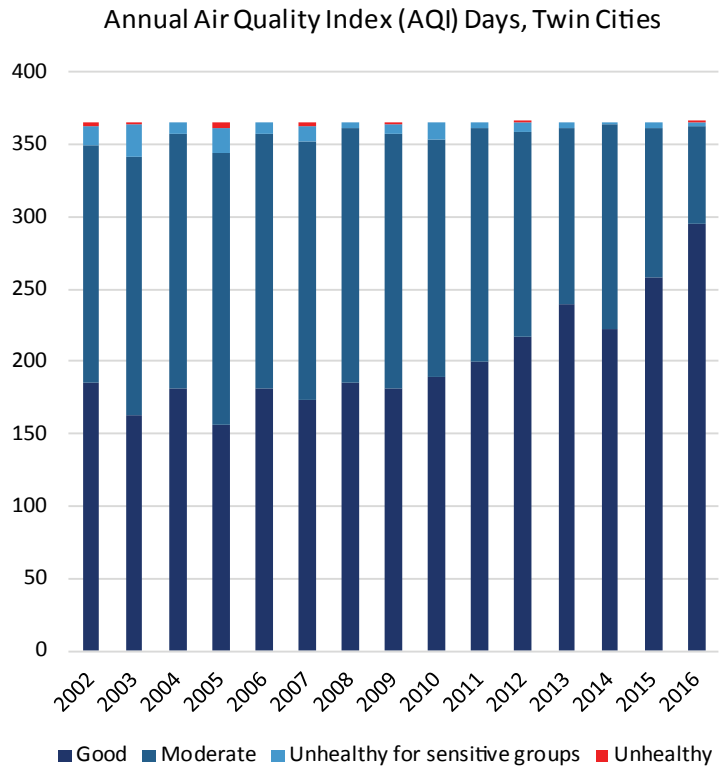
more vulnerable to air pollution-related health impacts, largely due to underlying health inequities. In addition, there have historically been more pollution sources, including busy roadways, located in lower-income neighborhoods and communities of color.[6]

RISK FACTORS

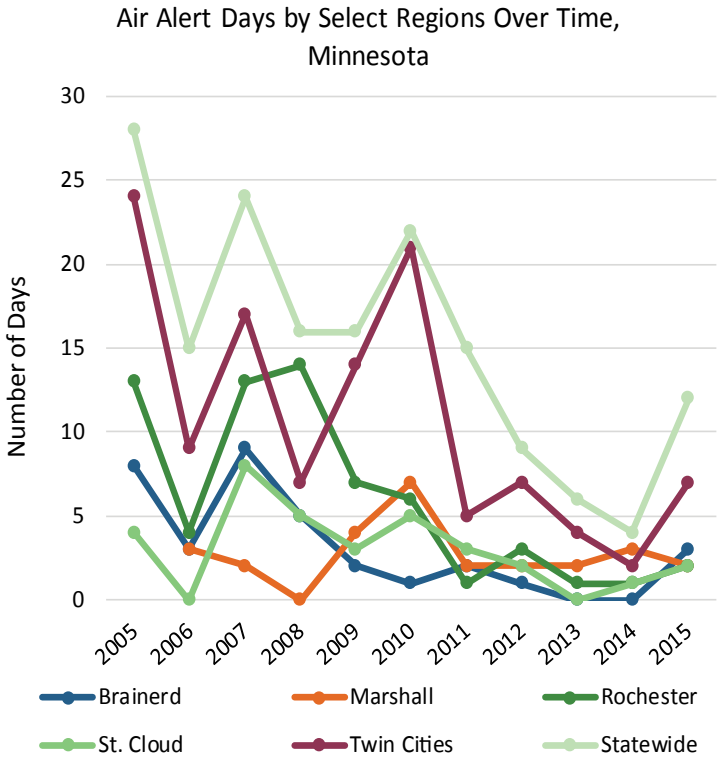
Those especially sensitive to air pollution include: individuals with preexisting lung or heart disease, the elderly, children, and participants in activities that require heavy or extended exertion outdoors.

WHAT RAMSEY COUNTY GOVERNMENT IS DOING

Ramsey County shares air quality alerts with the public through social media, including guidance on actions individuals can take to reduce exposure to unhealthy air. Through its website, Ramsey County promotes the resources produced by "Be Air Aware," a joint project of the Minnesota Department of Health and the Minnesota Pollution Control Agency that provides information about the connection between air pollution and associated health effects. More work needs to be done to understand the interaction between air pollution and health inequities, and to address the disparities they produce. Saint Paul - Ramsey County Public Health engages in this work in partnership with the Minnesota Pollution Control Agency, the Minnesota Department of Health, and others.



Source: Minnesota Pollution Control Agency.[7]



Source: Minnesota Pollution Control Agency.[8]

[6] The air we breathe: The state of Minnesota's air quality 2017. Minnesota Pollution Control Agency. https://www.pca.state.mn.us/sites/default/files/lraq-1sy17.pdf. Accessed January 16, 2018.
[7] Minnesota Pollution Control Agency. https://www.pca.state.mn.us/air/annual-aqi-summary-reports. Accessed January 16, 2018.
[8] Minnesota Pollution Control Agency. https://apps.health.state.mn.us/mndata/air_aqi. Accessed January 16, 2018.

Carbon Monoxide Poisoning

DESCRIPTION

Carbon monoxide (CO) is a colorless, odorless gas produced from gas furnaces, stoves, water heaters, portable generators and other gasoline or diesel engines. Inhaling large quantities of CO can cause carbon monoxide poisoning resulting in illness (including headache, dizziness, upset stomach, vomiting, chest pain and confusion) and death. Carbon monoxide poisoning is entirely preventable by installing and maintaining carbon monoxide detectors in residential housing and properly venting and maintaining appliances and motor vehicles.[1] As of May 1, 2017, a Minnesota law states that all motorboats with an enclosed accommodation area must be equipped with a marine CO detector. Gas powered boats with enclosed occupancy areas must display three CO warning stickers.[2] State law also requires CO alarms in all single and multi-family Minnesota residences, within ten feet of each room used for sleeping.

HOW WE ARE DOING

Between 2011 and 2015, there were 94 visits to emergency departments and 8 deaths due to CO poisoning among Ramsey County residents (down from 185 visits to emergency departments and 10 deaths in the previous 5-year span). The number and rate of CO deaths are likely related to the severity of winter. During cold winters heating devices are used more often, increasing the risk of CO poisoning. Overall, Ramsey County had a lower rate of carbon monoxide poisonings in the years 2011-2015 than did the state of Minnesota. The rate of CO poisoning ED visits is lowest among females aged 65+ and highest among adults between age 15 and age 34, and males overall.[3]

DISPARITIES

Limited research suggests that Hispanic and black populations may be at greater risk for CO poisoning than white populations.[4]

RISK FACTORS

Everyone is potentially at risk for CO poisoning. Infants, the elderly, people with chronic heart disease, anemia, or breathing problems (such as asthma or emphysema) are more likely to get sick from exposure to CO.[5] Those living in homes with an older or malfunctioning heating system are at increased risk for carbon monoxide poisoning. Homes with fuel-burning appliances or attached garages are more likely to have CO problems.[6]

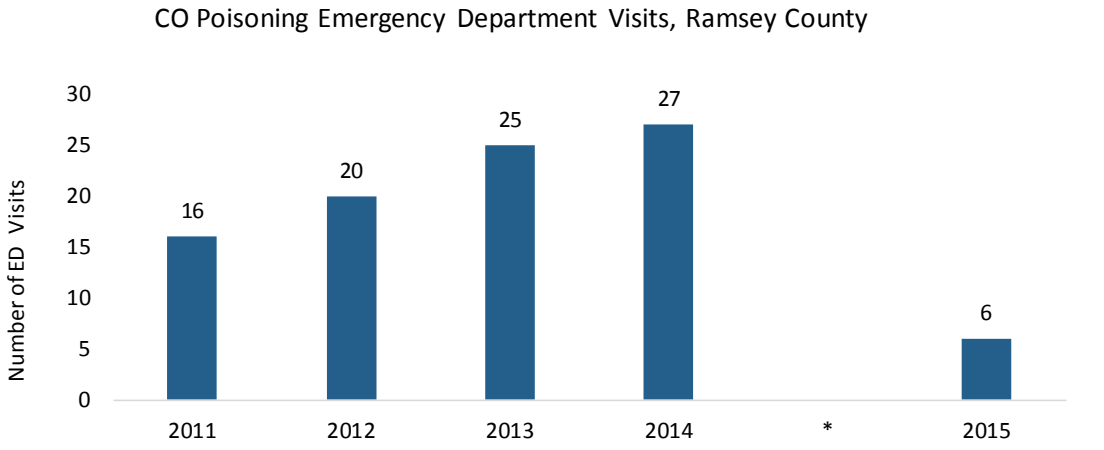
WHAT RAMSEY COUNTY GOVERNMENT IS DOING

Saint Paul- Ramsey County Public Health partners with the MN Department of Health and the MN Department of Public Safety to provide the public with winter safety information, including how to protect one's self and family from carbon monoxide poisoning. Through its internal policy on motorized equipment idling policy, Ramsey County instructs its employees to reduce idle time and ensure adequate ventilation of fuel exhaust from all vehicles and mobile motorized equipment used for county operations.

Information to note

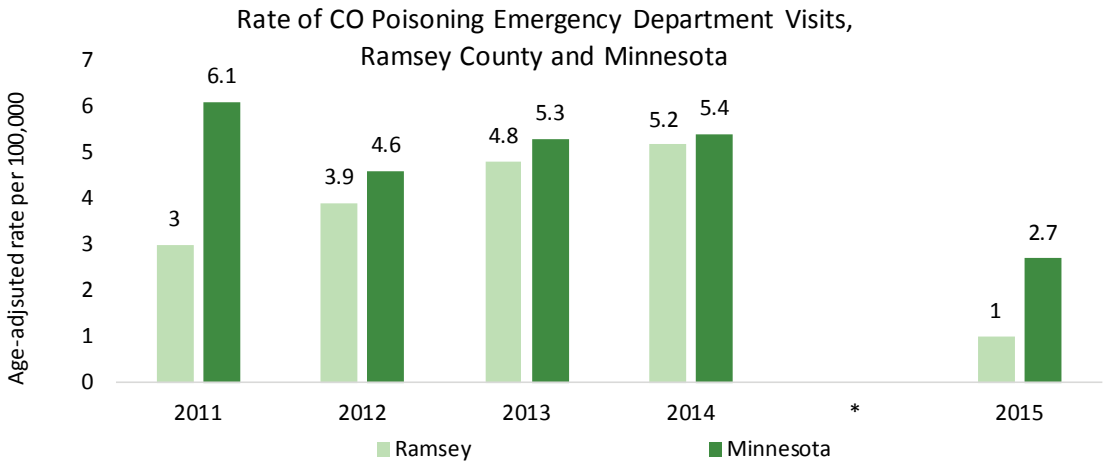
- Between 2011 and 2015, the number of emergency department visits went down approximately 50% compared to the previous 5-year span, and the number of deaths was reduced by 20%.
- Carbon monoxide poisoning is entirely preventable.

[1] Carbon monoxide poisoning. Centers for Disease Control and Prevention. https://www.cdc.gov/co/. Accessed November 8, 2017.
[2] Sophia's law – carbon monoxide law for boaters. Minnesota Department of Natural Resources. http://www.dnr.state.mn.us/safety/boatwater/sophias-law.html. Accessed November 8, 2017.
[3] CO poisoning ED visits: facts and figures. Minnesota Department of Health. https://apps.health.state.mn.us/mndata/carbon_monoxide_ed. Accessed November 8, 2017.
[4] California Environmental Tracking System. http://cehtp.org/faq/co/carbon_monoxide_poisoning_who_is_at_risk#_faq_4. Accessed June 29, 2018.
[5] What is carbon monoxide? Centers for Disease Control and Prevention. https://www.cdc.gov/co/faqs.htm. Accessed November 8, 2017.
[6] Carbon monoxide sources in the home. Minnesota Department of Health. http://www.health.state.mn.us/divs/eh/indoorair/co/index.html. Accessed November 8, 2017.



* Indicates a change in International Classification of Disease coding from ICD9 to ICD10. Rates from 2000-2014 should not be compared to rates from 2015 and later.

Source: Minnesota Department of Health.[7]



* Indicates a change in International Classification of Disease coding from ICD9 to ICD10. Rates from 2000-2014 should not be compared to rates from 2015 and later.

Source: Minnesota Department of Health.[7]

[7] MN Tracking Program, MDH. CO poisonings are unintentional, non-fire-related. https://data.web.health.state.mn.us/co. Accessed June 20, 2018.

Childhood Lead Exposure

DESCRIPTION

Lead poisoning causes many serious health problems for both children (including learning difficulties and behavioral issues) and adults (such as damage to kidneys and reproductive organs, and high blood pressure). Younger children are especially at risk because their bodies absorb more lead as their brains are still developing.[1] The most common source of lead exposure in a home is deteriorated lead-based paint and household dust containing lead. Less common sources include contaminated drinking water and soil, keys, imported toys, spices, cosmetics, pottery and ceramics, and other consumer products.[1] Lead testing is not universal in Minnesota. Children with risk factors for lead exposure (such as older housing or poverty status) are targeted for testing. This includes all children who live in Minneapolis or Saint Paul and all children on public insurance, as well as any child who lives in or regularly visits a home, child care, or other building built before 1978.[2] Recent studies indicate there is no safe level of exposure to lead.[3]

HOW WE ARE DOING

The Minnesota Department of Health Childhood Blood Lead Screening Guidelines direct physicians to order blood lead tests for children at high risk for exposure.[2] The percentage of Ramsey County children under 6 who get tested for lead has been declining since 2011 even though the child population continues to steadily increase. The Centers for Disease Control and Prevention (CDC) lowered the level of concern for children's blood lead levels in 2012 from 10 to 5 micrograms per deciliter (µg/dL).[3] This has resulted in an increase in the number of Ramsey County children requiring intervention, but that number has been decreasing over time. Ramsey County has one of the largest numbers of children with elevated blood lead levels in Minnesota.[4]

BENCHMARK INDICATOR

Healthy People 2020[5]:
1) Reduce blood lead levels in children aged 1-5 years.
U.S. Target: 5.2 µg/dL of lead
2) Reduce the mean blood lead levels in children aged 1-5 years.
U.S. Target: 1.6 µg/dL average blood lead level

DISPARITIES

According to the CDC, young children living in poverty are exposed to more sources of lead than children who are not in poverty.[6] Nationally, African-American children have the highest concentrations of blood lead compared to other children.[7]

RISK FACTORS

Children who are younger than 6 and live in homes built before 1950 are most at risk for lead exposure, because the paint in these homes may contain higher concentrations of lead (continued on back)

Information to note

- Lead poisoning is considered to be 100% avoidable.
- The number of Ramsey County children receiving lead tests has declined since 2011 even though the eligible child population continues to steadily increase.

Identified by the community

"Most of my Karen people live in old apartment complexes, I think this can also be unhealthy for them."

509 people (24%) mentioned physical environment as a factor that helps them or keeps them from being healthy.

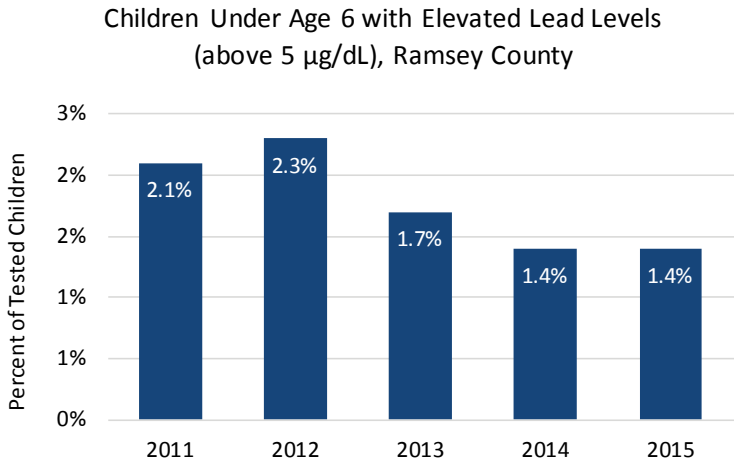
Within these 509 responses, there were 124 responses about clean living spaces and housing.

[1] What Do Parents Need to Know to Protect Their Children? Centers for Disease Control and Prevention. https://www.cdc.gov/nceh/lead/acclpp/blood_lead_levels.htm. Accessed May 10, 2018.
[2] Minnesota Department of Health. Childhood Blood Lead Screening Guidelines for Minnesota. http://www.health.state.mn.us/divs/eh/lead/reports/screening/blsg4mn.pdf. Accessed July 2, 2018.
[3] Minnesota Department of Health. Lead poisoning prevention programs biennial report 2017. https://www.leg.state.mn.us/docs/2017/mandated/170690.pdf. Accessed May 11, 2018.
[4] Minnesota Department of Health. Annual elevated blood lead levels: facts and figures. https://data.web.health.state.mn.us/web/mndata/lead_annual_level. Accessed May 10, 2018.
[5] Healthy People 2020. https://www.healthypeople.gov/2020/topics-objectives/topic/environmental-health/objectives. Accessed July 3, 2018.
[6] Minnesota Department of Health. Risk factors for childhood lead exposure: facts & figures. https://data.web.health.state.mn.us/lead_risk. Accessed May 10, 2018.
[7] Disparities Overview by Race and Ethnicity. HealthlyPeople.gov. https://www.healthypeople.gov/2020/data/disparities/summary/Chart/4356/3. Accessed May 10, 2018.

(lead-based paint was phased out of residential use in 1950 and eventually banned in 1978 in the U.S.).[8] In Ramsey County 33.2 percent of homes were built before 1950, and 73.6 percent were built prior to 1980.

WHAT RAMSEY COUNTY GOVERNMENT IS DOING

Saint Paul – Ramsey County Public Health coordinates follow-up and confirmation testing if a child's blood lead level is 5 µg/dL or greater. Information is provided to caregivers on how to reduce and/or avoid exposure to lead. Referrals for educational interventions are also offered. Minnesota law requires environmental interventions for children at 15 µg/dL or greater and pregnant woman who test positive for blood lead levels at 10 µg/dL or greater.[9] Interventions include a housing risk assessment, visits from a public health nurse, enforcement orders, lead-hazard reduction or remediation, and clearance testing. Saint Paul – Ramsey County Public Health staff work closely with homeowners, property managers, the Minnesota Department of Health, the City of Saint Paul and several neighborhood organizations to ensure that all lead-based paint hazards are corrected. Public health nurses monitor the child's development and nutrition until the lead level drops below 5 µg/dL.



Source: Minnesota Department of Health.[10]

[8] Minnesota Department of Health. Risk factors for childhood lead exposure: facts & figures. https://data.web.health.state.mn.us/lead_risk. Accessed May 10, 2018.
[9] 2017 Minnesota Statutes Section 144.9504. https://www.revisor.mn.gov/statutes/cite/144.9504. Accessed July 2, 2018.
[10] Minnesota Department of Health, Minnesota Public Health Data Access Portal. http://data.web.health.state.mn.us/lead_query. Accessed July 2018.

Energy Management

DESCRIPTION

Through its 2011 Ramsey County Energy Management and Stewardship Plan, a framework for energy efficiency and conservation in the county is in place, with a commitment to maximizing energy-related investment dollars, reducing energy use, demonstrating environmental steward and managing public funds responsibly.[1] One purpose of the plan is to reduce public health risks. Most of Ramsey County's energy supply has historically come from fossil fuels, the burning of which contributes to air and water pollution.

HOW WE ARE DOING

Energy use is trending down in Ramsey County buildings. In 2008, total energy consumed to heat, cool, operate and provide for energy needs in buildings under county ownership was 317,616 MBTU. By 2015, this annual number had fallen to just over 256,535 MBTU, a 20 percent reduction.[2]

While energy use is one data point to measure, reporting on that alone doesn't accurately reflect progress towards overall energy management goals. For example, as a single category, energy use includes energy obtained from a variety of sources, while the burning of fossil fuels specifically has a more direct and negative impact on health than does the use of renewable sources of energy. Tracking greenhouse gas emissions is another important measure of sustainability and environmental stewardship. Engagement in the activities outlined in the county's energy plan will enable a more robust analysis of progress toward energy efficiency and carbon reduction goals in the coming years.

BENCHMARK INDICATOR

Minnesota Next Generation Energy Act[3]: Reduce energy use and greenhouse gas emissions.

Minnesota Target: 15% reduction from 2005 levels.

WHAT RAMSEY COUNTY GOVERNMENT IS DOING

Ramsey County Property Management provides professional facility management services to 18 county buildings. These buildings represent approximately 70 percent of the 3.2 million square feet owned by the county. Property Management partners with the departments responsible for the remaining 30 percent (Community Corrections, Social Services and Financial Assistance, Parks and Recreation, Saint Paul – Ramsey County Public Health and the Medical Examiner), providing consultation when requested on building and energy related issues. The County's Energy and Sustainability Coordinator coordinates energy and sustainability functions, work teams, measurement and reporting, projects, and programs.

Since the mid 1990s, Property Management has used a variety of energy saving strategies to its physical infrastructure, including: identifying energy-efficiency opportunities, conducting energy-efficient lighting retrofits in all Ramsey County facilities over 5000 square feet, conducting a design performance calculation based on best available technology for energy-efficiency and resource-usefor all new construction and remodeling projects, constructing the new Roseville Library as the first Leadership in Energy and Environmental Design (LEED) Gold certified building owned by Ramsey County and purchasing and using software to track utility use in buildings.

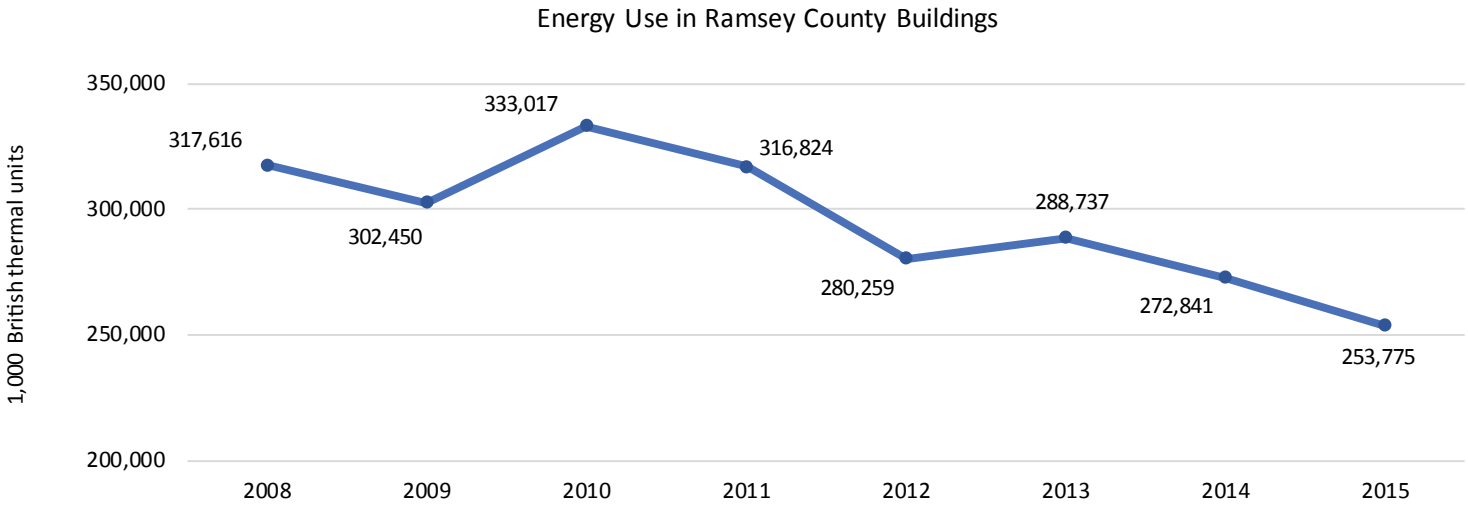
(continued on back)

Information to note

- Ramsey County has been integrating energy-efficiency measures into county operations for more than twenty years.
- Energy use in Ramsey County facilities is decreasing.

[1] Ramsey County Energy Management and Stewardship Plan. March 4, 2011. http://www.mepc-mn.org/Best%20Practices/policies/ramsey_energy_management_plan_2011.pdf. Published March 4, 2011. Accessed December 29, 2017.
[2] Saint Paul – Ramsey County Public Health data set. February 1, 2018.
[3] Minnesota Center for Environmental Advocacy. Clarification of the Next Generation Energy Act. Section 216H.03. http://www.mncenter.org/uploads/7/9/3/5/79357940/next_gen_energy_act_f.pdf. Accessed July 2, 2018.

Ramsey County is piloting the use of renewable energy in its Parks and Recreation department, including a "Green Spaces, Green Places" campaign (a commitment to reducing energy use in all department facilities 35% by 2025), an "Energy Week" (to promote energy conservation, use of renewable energy and increased awareness around energy goals), and a "Green Ice" initiative (to reduce energy usage at the county's arenas).



Source: Saint Paul – Ramsey County Public Health.

Greenhouse Gas

DESCRIPTION

Greenhouse gases (GHGs) are gases that warm the atmosphere and surface of the planet, leading to changes in the Earth's climate. The conventional GHGs are carbon dioxide (CO2), nitrous oxide (N2O), methane (CH4), sulfur hexafluoride (SF6), and two classes of compounds known as hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs). Most GHG emissions are CO2, but the other GHGs have very strong warming effects. The primary source of greenhouse gases is the burning of fossil fuels used to produce energy and power motor vehicles. Animal and crop agriculture, landfills and the use of air conditioning also contribute to GHG emissions.[1]

Greenhouse gases play an important role in the earth's climate by trapping heat in the atmosphere. They are necessary to a degree, but excessive amounts of these gases can cause changes in temperature, precipitation, and wind patterns that are disruptive to our ecosystems. These climate changes threaten the survival of some plant and animal species and can also have negative impacts on human health through increased pollution, increased prevalence of disease, and the occurrence of significant weather events such as drought, extreme temperatures, flooding, high winds, global warming and severe storms.[2]

HOW WE ARE DOING

In 2007, the Minnesota Legislature passed the Next Generation Energy Act, which set goals for renewable energy use, energy conservation and greenhouse gas emissions. These include: 15 percent reduction in GHG emissions by 2015, 30 percent reduction by 2025, and 80 percent reduction by 2050, compared to 2005 emissions. It is unlikely that these future goals will be achieved.

While greenhouse gas emissions from activities throughout the state from 2005 to 2014 decreased slightly (about 4 percent overall), and significant emissions reductions have been seen in some specific areas (especially in electricity generation where emissions decreased 17 percent from 2005 to 2014, due to reduced coal use), emissions have increased in other areas.3 Transportation GHG emissions are 25 percent of the state's total GHG emissions; while newer vehicles are more efficient and more biofuels are available and replacing fossil fuels, consumers have been choosing to replace smaller cars with larger vehicles. The resulting emissions increase from these vehicles offsets other reductions. GHG emissions from the industrial sector increased since 2005, mostly due to the increasing use of low-cost natural gas.[3]

Mitigation efforts have prevented the increase in emissions that would have otherwise occurred without these efforts. However, without significant additional changes, Minnesota will not achieve the second Next Generation Energy Act goal — a 30 percent reduction in GHG emissions by 2025.

BENCHMARK INDICATOR

State Statute sets goals for reducing GHG emissions in Minnesota:

- 15% below the 2005 level by 2015
- 30% below the 2005 level by 2025
- 80% below the 2005 level by 2050

Information to note

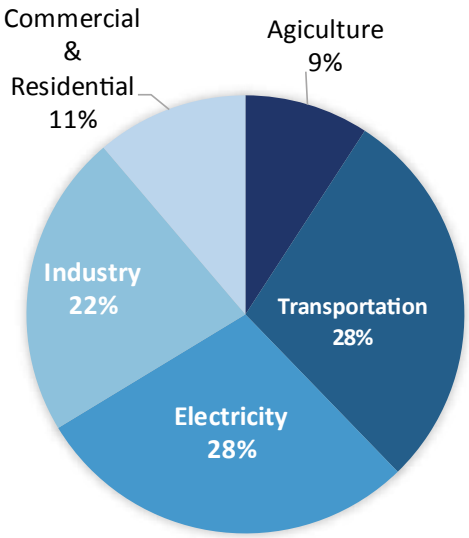
- The primary source of greenhouse gases is the burning of fossil fuels used to produce energy and power motor vehicles.
- The Minnesota Legislature set goals for reducing GHG emissions 15% below 2005 levels by 2015, 30% by 2025 and 80% by 2050.
- Since 2008, Ramsey County has reduced energy use in its facilities by 20%.

[1] Climate Change Science: Causes of Climate Change. United States Environmental Protection Agency. https://19january2017snapshot.epa.gov/climate-change-science/causes-climate-change_.html Accessed December 16, 2017.
[2] Greenhouse gas emissions. Minnesota Compass. http://www.mncompass.org/environment/greenhouse-gas-emissions#1-418-g. Accessed December 16, 2017.
[3] Greenhouse gas emissions in Minnesota. Minnesota Pollution Control Agency. https://www.pca.state.mn.us/air/greenhouse-gas-emissions-minnesota-0. Accessed December 16, 2017.

WHAT RAMSEY COUNTY GOVERNMENT IS DOING

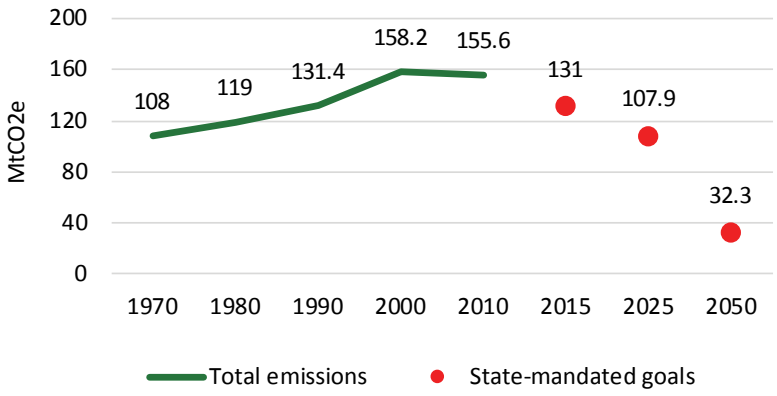
Ramsey County adopted goals for energy use reduction that more closely align with Minnesota's GHG emission reduction goals (i.e., reduce carbon emissions across county operations 30 percent by 2025 and 80 percent by 2050, compared to 2008 data). Since 2008, the county has reduced energy use in its facilities by 20 percent. Due to data gaps, it cannot be determined if the county's fleet has reduced emissions over this time. Other areas of county programs and operations contribute to GHG emissions but have not been tracked. It is anticipated that this data will be collected as it becomes available (for example, fleet operations were centralized in 2016 and a new data tracking system for liquid fuels has been implemented).

Total U.S. Greenhouse Gas Emissions by Economic Sector, 2016



Source: U.S. Environmental Protection Agency.[4]

Total Greenhouse Gas Emissions, Minnesota, 1970-2025



Source: Minnesota Compass.[5]

[4] Source: U.S. Environmental Protection Agency https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions
[5] Source: Minnesota Compass http://www.mncompass.org

Ground - level Ozone

DESCRIPTION

Ozone and small particles in outdoor air (also known as $PM_{2.5}$) are primary causes of poor air quality in Minnesota. Ozone, unlike the other pollutants, is not emitted directly into the air by any one source. Ground-level ozone is a secondary pollutant, exists in the atmosphere close to earth. It is not the same as the "ozone layer" in the earth's outer atmosphere (the stratosphere), where ozone helps to absorb ultraviolet radiation that would otherwise be harmful to organisms on the earth's surface.[1]

Sources of pollutants that form ozone include gasoline and diesel vehicles, construction equipment, lawn and garden equipment, paints and solvents, refueling stations, factories, electric utilities and other activities that result in the burning of fossil fuels.[2] Ozone can irritate the eyes, nose and throat; aggravate asthma, bronchitis and allergies; decrease lung function; and possibly lead to death.[3] The Minnesota Pollution Control Agency (MPCA) monitors ozone pollution at locations across Minnesota from March through October each year.

HOW WE ARE DOING

The number of "good" days for ozone concentration in the Twin Cities area has increased over the past five years, while the number of "moderate" and unhealthy days has decreased. Because of the role of heat and sunlight play in the formation of ground-level ozone, it is generally not a concern in Minnesota during the winter months. On hot, sunny summer days, however, ozone concentrations can rise to unhealthy levels. In the past 10 years, about 1 percent of all days were unhealthy for ozone in the metro area.

While Ramsey County and Minnesota are currently in compliance with the federal standard (70 ppb), ozone is a pollutant of concern because levels have been relatively close to the national standard for the past six years. Due to the significant role that weather conditions play in daily ozone concentrations, predicting future levels and trends is difficult.

BENCHMARK INDICATOR

U.S. Environmental Protection Agency: Reduce ground-level ozone.
U.S. Target: 70 parts per billion (ppb).

DISPARITIES

Greater air pollution impacts from all sources, and especially transportation sources, have been found in nonwhite and low socio-economic status populations than in white and higher socio-economic status populations.[4]

RISK FACTORS

While ozone can affect anyone, people most likely to experience negative health effects include: people with asthma or other lung diseases, older adults, people of all ages who exercise or work hard outside, babies and children.[5] Exposure to high levels of ground-level ozone can increase the risk of premature death in individuals already suffering from heart or lung disease.

(continue on next page)

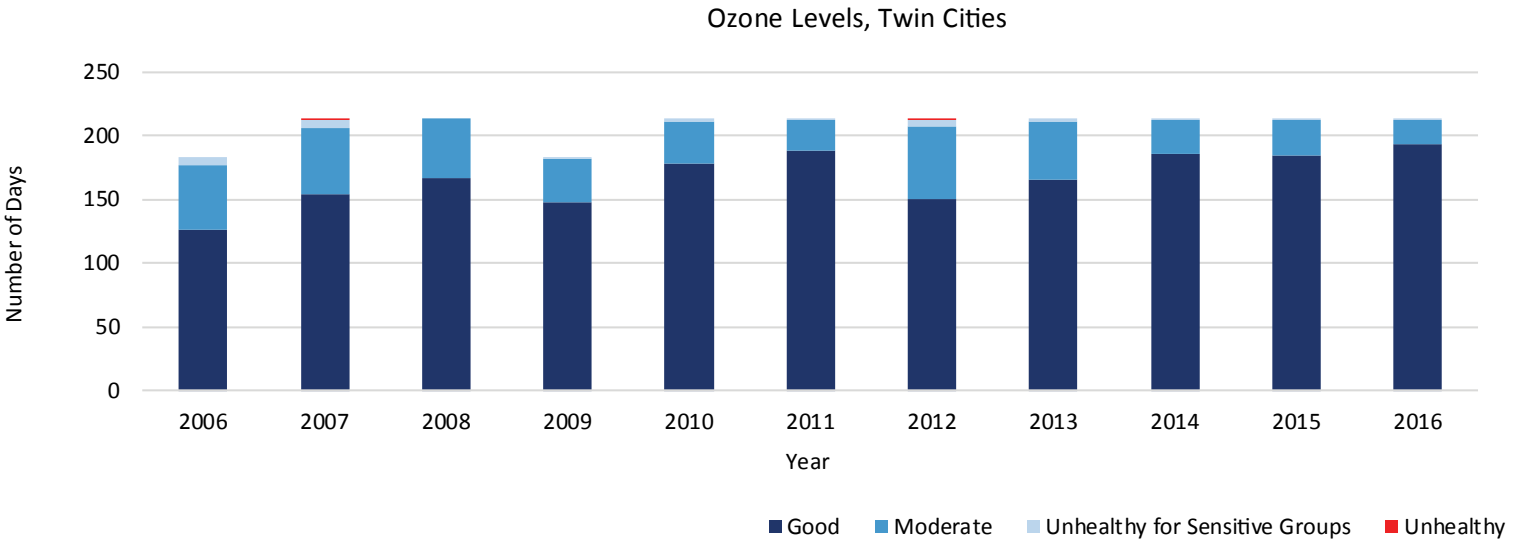
Information to note

- The number of "good" days for ozone concentration in the Twin Cities has increased in the past five years.
- On hot, sunny summer days, ozone concentrations can rise to unhealthy levels.
- Emissions from vehicles, factories, electric utilities and other activities that burn fossil fuels are top contributors to ground-level ozone.

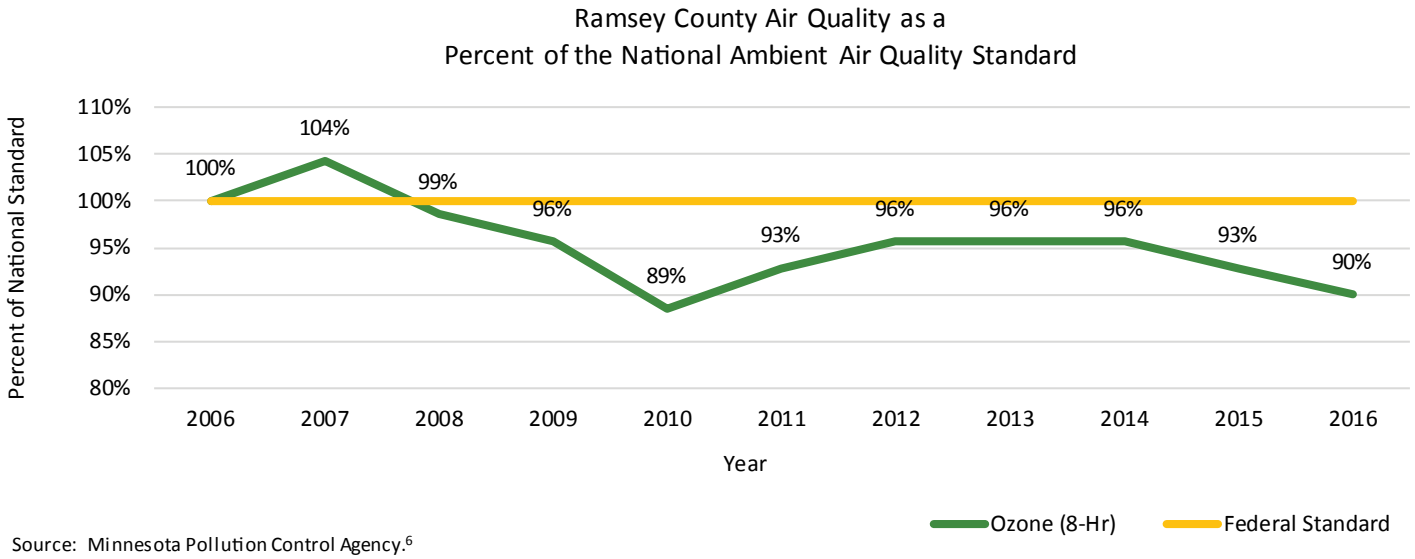
[1] Ozone. Minnesota Pollution Control Agency. https://www.pca.state.mn.us/air/ozone. Accessed January 23, 2018.
[2] Ozone pollution. United States. Environmental Protection Agency. https://19january2017snapshot.epa.gov/ozone-pollution_.html. Accessed January 23, 2018.
[3] Air Quality. Ground-level ozone. Minnesota Department of Health. http://www.health.state.mn.us/divs/climatechange/air.html. Accessed January 23, 2018.
[4] Pratt GC, Vadali ML, Kvale DK, Ellickson KM. Traffic, air pollution, minority and socio-economic status: addressing inequities in exposure and risk. Int. J. Environ. Res. Public Health. 2015;12(5):5355-5372. http://www.mdpi.com/1660-4601/12/5/5355/htm. Published May 19, 2015. Accessed January 28, 2018.
[5] Ozone and your health. Centers for Disease Control and Prevention. https://www.cdc.gov/air/ozone.html. Accessed January 23, 2018.

WHAT RAMSEY COUNTY GOVERNMENT IS DOING

Ramsey County alerts the public through its website when ground-level ozone levels are expected to reach unhealthy levels. The website also includes advice for staying healthy during periods of poor air quality by partnering with "Be Air Aware." Saint Paul – Ramsey County Public Health's "Solid Waste Management Master Plan" and "Energy Management and Stewardship Plan" describe the commitment to reducing greenhouse gas emissions (including ozone) and encouraging the use of renewable energy.



Source: Minnesota Pollution Control Agency.[6]



Source: Minnesota Pollution Control Agency.[6]

[6] Source: Cassie McMahon (Environmental Research Scientist), Air Assessment Section of the Environmental Analysis and Outcomes Division, Minnesota Pollution Control Agency.

Hazardous Events

DESCRIPTION

Every community must prepare for and respond to hazardous events, whether a natural disaster like a tornado, a disease outbreak, or a human-made event like a harmful chemical spill. Many factors, including poverty, lack of access to transportation, and crowded housing may weaken a community's ability to prevent human suffering and financial loss in the event of disaster. These factors are known as social vulnerability. Social vulnerability may impact the resilience of communities when confronted by external stresses, such as natural or human-caused disasters. Reducing social vulnerability can decrease both human suffering and economic loss.[1]

The Agency for Toxic Substances & Disease Registry (ATSDR) at the Centers for Disease Control and Prevention developed a national social vulnerability index (SVI) to identify areas most likely to need support to prepare for, respond to, and recover from a hazardous event. The SVI ranks each census tract on several factors. Areas with higher percentages of minorities, people who have limited English proficiency, persons below poverty, unemployed, and without a high school diploma as well as lower per capita income will have a higher vulnerability score. Areas with higher percentages of persons age 65+, age 17 and younger, residents with a disability and single parent households with young children, multi-unit housing, mobile homes, crowded homes, no vehicle access, and institutionalized group quarters will also have a higher vulnerability score.[1]

HOW WE ARE DOING

Areas of moderate to high vulnerability for socio-economic status located areas along and north of I-94, St. Paul's East Side and West Side and parts of Mounds View.

Areas of moderate to high vulnerability for household composition and disability are along and north of I-94, St. Paul's East Side and West Side and parts of Mounds View, New Brighton, Maplewood, White Bear Lake, Roseville and Little Canada.

Areas along and north of I-94, St. Paul's East Side and West Side and in parts of Mounds View, St. Anthony, Maplewood, Lauderdale, Falcon Heights and Little Canada have the most residents with limited English language proficiency.

Areas of high vulnerability in Ramsey County are predominantly in St. Paul along and north of I-94, St. Paul's East Side and West Side, and in parts of Mounds View, New Brighton and Roseville.

DISPARITIES AND RISK FACTORS

The social and economic marginalization of certain racial and ethnic groups, including ongoing real estate discrimination, have rendered these populations more vulnerable at all stages of disaster or event. Multi-unit housing in densely populated areas also poses a heightened risk for tenants.[1]

Children under 17 years of age are more vulnerable due to the developing state of their immune systems and their dependence on adult supervision. In addition, their bodies are not able to regulate temperature as well. Older adults tend to be more vulnerable to the negative impacts of climate change especially extreme weather events, such as periods of intense heat and humidity. Vulnerability is due to a variety of factors, such as limited mobility, existing chronic conditions or multiple illnesses, and dependence on others for basic care needs. People with disabilities may have additional special needs that often require support from others.[1]

Information to note

- Areas of high vulnerability in Ramsey County are along and north of I-94, St. Paul's East Side and West Side and in some areas of Mounds View, New Brighton, & Roseville.

[1] Centers for Disease Control and Prevention. The Agency for Toxic Substances & Disease Registry. The social vulnerability index. https://svi.cdc.gov/. Accessed July 2018.

Housing quality is an important factor in evaluating disaster vulnerability. It is closely tied to personal wealth; that is, poor people often live in more poorly constructed houses or mobile homes that are especially vulnerable to strong storms.[1]

Mobile homes may not be designed to withstand severe weather or flooding and typically do not have basements. They may not be readily accessible by interstate highways or public transportation. Also, because mobile homes are often clustered in communities, the overall vulnerability of their inhabitants is increased.[1]

People living in high-rise apartments are vulnerable to overcrowding when funneled into a limited number of exit stairwells. Furthermore, large numbers of people exiting in the street can make safe and orderly evacuation of everyone difficult and dangerous. Crowding within existing housing units may exacerbate these difficulties.[1]

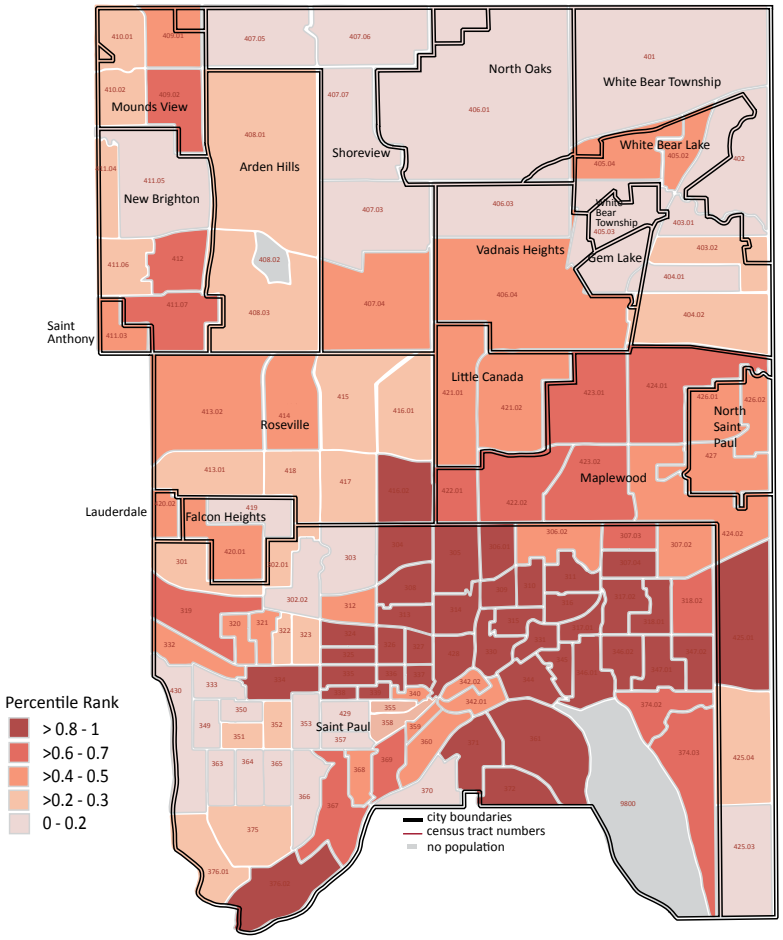
Rates of automobile ownership are generally lower in urban areas. Transportation out of an evacuation zone is problematic for people who do not have access to a vehicle. For some people, fuel costs may prevent vehicle use.[1]

Populations residing in group quarters such as college dormitories, psychiatric institutions, and prisons also present special concerns during evacuation. Residents of nursing homes and long-term care facilities are especially vulnerable because of their special and timely needs. Known issues around understaffing in emergencies may exacerbate underlying health issues in the populations. Moreover, many institutions are unprepared to quickly remove their entire staff and residents under conditions that require specialized vehicles.[1]

WHAT RAMSEY COUNTY GOVERNMENT IS DOING

Ramsey County uses social vulnerability index data to identify communities that will need extra support during emergencies. This includes estimating the amount of needed supplies like food, water, medicine and bedding, and the number of emergency personnel required to assist people living in more vulnerable communities.

Social Vulnerability by Census Tract, Ramsey County, 2016



Source: Centers for Disease Control and Prevention.[2]

[2] Source: Centers for Disease Control and Prevention. The Agency for Toxic Substances & Disease Registry. The social vulnerability index. https://svi.cdc.gov/. Accessed July 2018.

Health and a Changing Climate

DESCRIPTION

Though often used interchangeably, "weather" and "climate" have different meanings. Weather reflects short-term conditions of the atmosphere; climate is the average daily weather for an extended period (usually 30 years or more) at a certain location.

Climate change is occurring in Minnesota and its impacts are affecting our state's environment, economy and communities. Government agencies across the state are concerned about the impacts of a changing climate on our natural resources, economy, health and quality of life, and are taking actions to address these emerging challenges.[1] Work on climate change can be categorized into two areas: mitigation and adaptation. The goal of mitigation is to limit the magnitude or progression of climate change by addressing the causes (such as greenhouse gas emissions), while adaptive approaches are actions taken to prepare for and respond to the effects of climate change on humans and natural systems. Without effective mitigation, humans and natural systems will find it increasingly difficult, if not impossible, to adapt.[2]

HOW WE ARE DOING

There are three pronounced trends in Minnesota and Ramsey County when it comes to climate change: it's becoming warmer and wetter; wintertime, nights and cold extremes are warming the fastest; and heavy and extreme rainfall is increasing and becoming more frequent.[3]

Since 2001, Minnesota has experienced 10 of its top 20 warmest years on record dating to 1895. Two of the state's top five warmest years have happened in the last five years: 2012 was the second-warmest year, and 2016 ranked as the fifth-warmest year. Since the start of the 20th century, the annual average temperature statewide has risen more than 2 degrees Fahrenheit, with most of the warming occurring in winter. In December-February, temperatures have risen about 4 degrees Fahrenheit (1896-2017). Minnesota's average temperature could rise 4 to 5 degrees Fahrenheit by the middle of the century (2041-2070) as compared to 1971-2000[4]. Both the long-term and recent rates of warming in Minnesota are faster than national and global trends.[5]

Annual average precipitation – rain and melted snow combined – is expected to increase, particularly in spring and winter. Decades of records show that the number of 3-inch rainfalls is steadily increasing. Simultaneously, droughts could become more intense due to warmer temperatures increasing the soil moisture loss in times of dry weather. Ice cover on Minnesota's lakes is building later than usual and melting sooner in spring. Poor air quality days could also become more numerous due to hotter temperatures, leading to the formation of ground-level ozone.[3]

Over the last several decades, the state has experienced substantial warming during winter and at night, with increased precipitation throughout the year, often from larger and more frequent heavy rainfall events. The heaviest snowstorms have also become larger, even as winter has warmed. These changes alone have damaged buildings and infrastructure,

Information to note

- Our weather is becoming warmer and wetter.
- Climate-related events affect individuals differently based on socioeconomic status, age and other factors.

[1]Adapting to Climate Change in Minnesota: 2017 Report of the Interagency Climate Adaptation Team. Minnesota Department of Health. https://www.pca.state.mn.us/sites/default/files/p-gen4-07c.pdf. Published May 2017. Accessed December 15, 2017.
[2]Responding to Climate Change. National Aeronautics and Space Administration. Global Climate Change: Vital Signs of the Planet. https://climate.nasa.gov/solutions/adaptation-mitigation/. Accessed April 30, 2018.
[3]Dolce C. Minnesota: Real Impacts in an Unexpected Place. The Weather Company. http://features.weather.com/us-climate-change/minnesota/. Published May 18, 2017. Accessed December 15, 2017.
[4]Pryor, S. C., D. Scavia, C. Downer, M. Gaden, L. Iverson, R. Nordstrom, J. Patz, and G. P. Robertson, 2014: Ch. 18: Midwest. Climate Change Impacts in the United States: The Third National Climate Assessment, J. M. Melillo, Terese (T.C.) Richmond, and G. W. Yohe, Eds., U.S. Global Change Research Program, 418-440. doi:10.7930/J0J1012N. https://nca2014.globalchange.gov/report/regions/midwest. Accessed June 20, 2018.
[5]National Oceanic and Atmospheric Administration. Climate at a Glance. NOAA climate.gov. https://www.climate.gov/maps-data. Accessed December 15, 2017.

limited recreational opportunities, altered our growing seasons, impacted natural resources, and affected the conditions of lakes, rivers, wetlands, and our groundwater aquifers that provide water for drinking and irrigation. The years and decades ahead are predicted to continue this trend and additional climatic changes.[6]

DISPARITIES

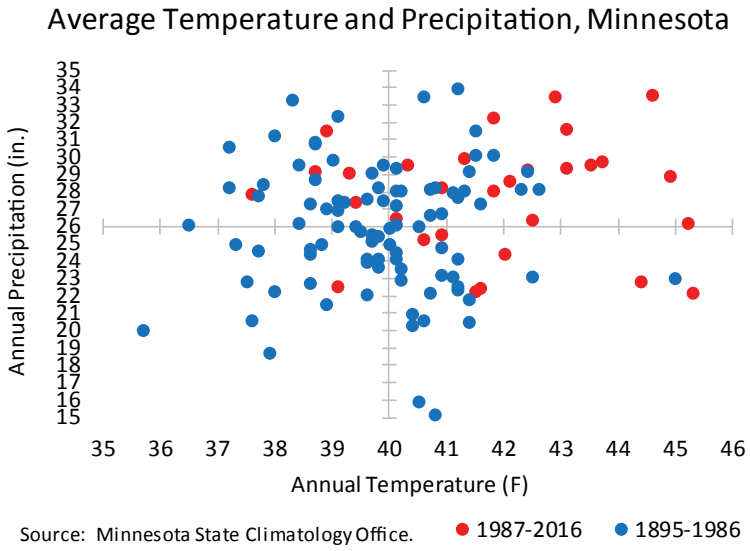
As climate change impacts factors like heat stress, air pollution, and affordable fresh food, reliance on strategies such as health care and air conditioning are likely to widen the mortality gap between the rich and poor, who do not have equal access to health care, clean air, or weatherized homes.[7]

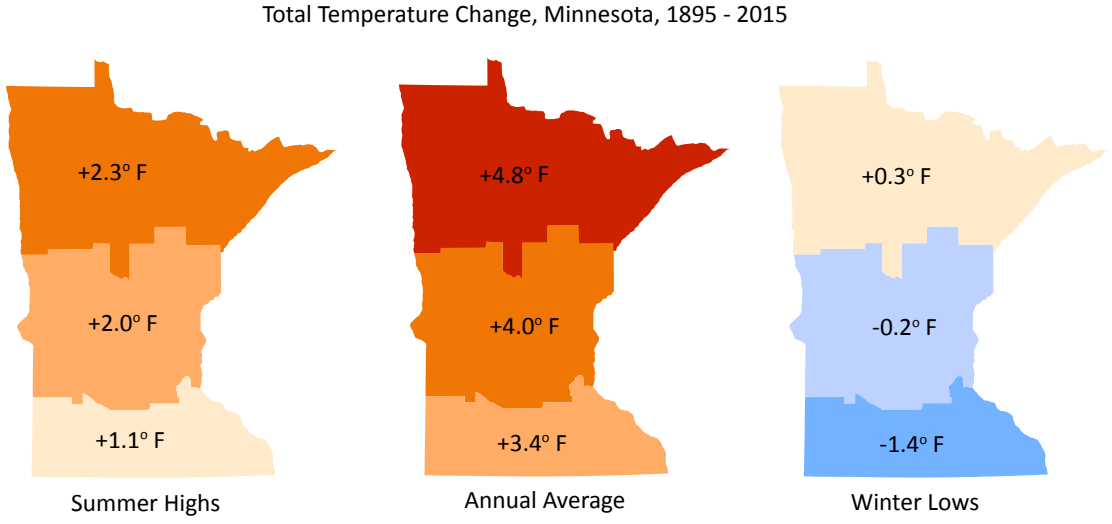
RISK FACTORS

Socio-economic status, education level, age, communication barriers, housing conditions and type of employment influence vulnerability. For example, those over 85 or under 5 years old, living in poverty, lacking access to air conditioning, and/or working outdoors are especially vulnerable to the effects of an extreme-heat event.

WHAT RAMSEY COUNTY GOVERNMENT IS DOING

A climate change health vulnerability assessment was completed by Saint Paul – Ramsey County Public Health that describes: climate change trends, how these trends directly and indirectly affect human health, characteristics that increase individual vulnerability to the effects of climate change, and geographic regions of vulnerability in the county. Ramsey County will be working to develop community-based actions that can be implemented to address areas of vulnerability and increase resilience in the face of a changing climate.





Source: Minnesota State Climatology Office.

[6] Adapting to Climate Change in Minnesota: 2017 Report of the Interagency Climate Adaptation Team. Minnesota Department of Health. https://www.pca.state.mn.us/sites/default/files/p-gen4-07c.pdf. Published May 2017. Accessed December 15, 2017.

[7] Schwartz RM, Gillezeau CN, Liu B, Lieberman-Cribbin W, Taioli E. Longitudinal impact of hurricane Sandy exposure on mental health symptoms. Int. J. Environ. Res. Public Health. 2017; (9): pii: E957. doi: 10.3390/ijerph14090957. https://www.ncbi.nlm.nih.gov/pubmed/28837111. Accessed April 30, 2018.

Radon

DESCRIPTION

Radon is a colorless, odorless gas produced from the natural decay of uranium in the soil. Long-term exposure to radon can damage lung cells. Radon is the nation's second leading cause of lung cancer, causing 21,000 lung cancer deaths in the U.S. each year.[1] Radon may enter a home anywhere there is an opening to soil, including cracks in the foundation, floor drains and sump pumps. The levels of radon that can build up indoors vary by the amount of radon in the source material and its rate of entry into the building.

HOW WE ARE DOING

Two in five Minnesota homes have high radon levels. The Minnesota Department of Health recommends every home be tested for radon.[1] An average of 1,342 homes are tested every year in Ramsey County. Of those tested between 2010-2016, 66.9 percent were at or above the level which mitigation actions were recommended by the Environmental Protection Agency, 32.4 percent were at the level which mitigation actions were highly encouraged.

At 3.3 pCi/L, the average radon level in Ramsey County is more than two times higher than the average U.S. radon level (1.3 pCi/L), while in Minnesota overall it is more than three times higher (4.5 pCi/L).[2] Since 2009, all new home construction in Minnesota must be "mitigation ready," meaning that all the equipment necessary for a radon reduction system is built into the home.[3]

BENCHMARK INDICATOR

Healthy People 2020:[4]

1) Increase the proportion of new single-family homes constructed with radon-reducing features, especially in high-radon-potential area.
U.S. Target: 100 percent.

2) Increase the proportion of homes with an operating radon mitigation system for persons living in homes at risk for radon exposure.
U.S. Target: 30 percent.

DISPARITIES

Radon is present everywhere, and all Minnesota homes are at risk to some degree, based on air pressure between the home's interior and the exterior soil and the existence of entrance pathways. Because testing for and removing radon can cost several thousand dollars, those with limited financial resources are less able to avoid radon exposure in their homes.

RISK FACTORS

Radon can enter a building in a variety of ways regardless of whether it has a basement, is old or new, or is drafty or well insulated. Radon levels are usually highest at entry points and in the lower levels (like a basement), and during the colder months (when buildings are less likely to be open to the outdoors).

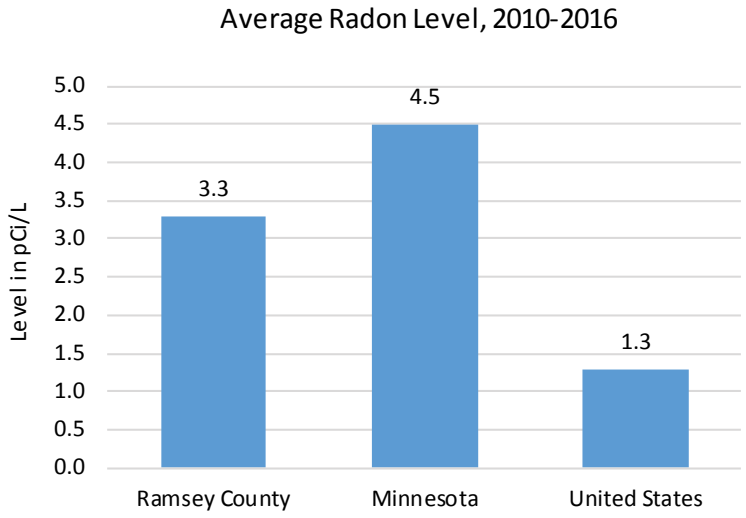
WHAT RAMSEY COUNTY GOVERNMENT IS DOING

Saint Paul- Ramsey County Public health sells inexpensive radon test kits to provide a "snapshot" of a resident's home radon level. Public health also educates residents on radon exposure, the importance of home testing and mitigation options for homes with elevated levels.

Information to note

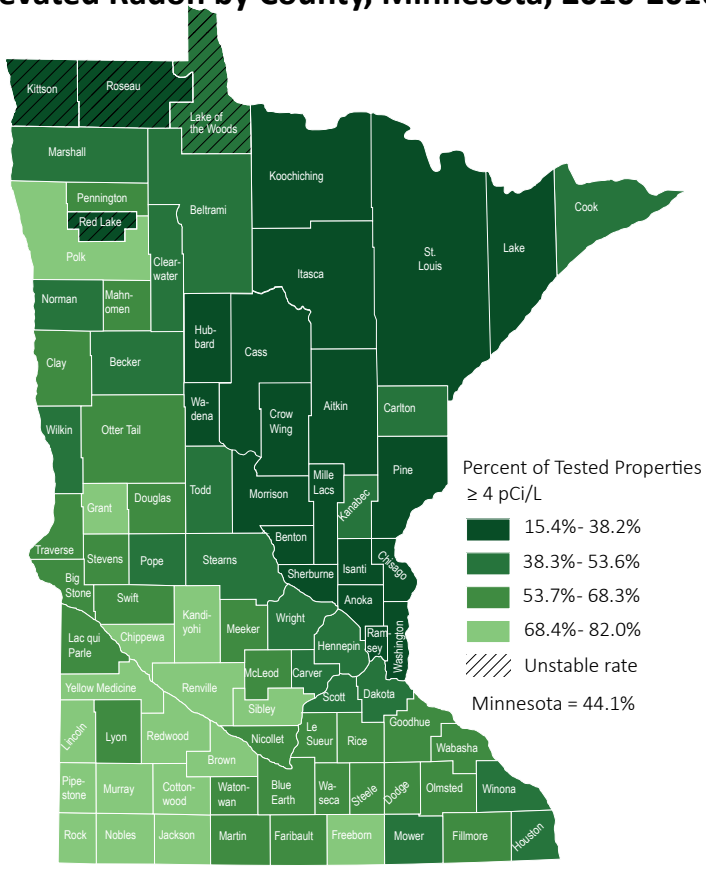
- 2 out of every 5 homes in Minnesota have high radon levels.
- Of the homes tested for radon every year in Ramsey County, about 32% have levels at or above 4 picocuries per liter (pCi/L).
- Average radon levels in Ramsey County are more than three times higher than the average Minnesota level.

[1] Radon in Minnesota homes. Minnesota Department of Health. http://www.health.state.mn.us/divs/eh/indoorair/radon/index.html. Accessed December 6, 2017.
[2] Comparing Minnesota and U.S. average radon levels. Minnesota Department of Health. https://apps.health.state.mn.us/mndata/radon_facts. Accessed December 12, 2017.
[3] Radon resistant new construction. Minnesota Department of Health. http://www.health.state.mn.us/divs/eh/indoorair/radon/radonresistant.html. Accessed January 25, 2018.
[4] Healthy People 2020. https://www.healthypeople.gov/2020/topics-objectives/topic/environmental-health/objectives. Accessed July 2, 2018.



Source: Minnesota Department of Health.[5]

Elevated Radon by County, Minnesota, 2010-2016



Source: Minnesota Department of Health Indoor Air Unit

[5] Minnesota Department of Health. https://apps.health.state.mn.us/mndata/radon_facts#mnavg https://cfpub.epa.gov/roe/indicator.cfm?i=27#1. Accessed July 2018.

Secondhand Smoke

DESCRIPTION

Smoke from a cigarette, pipe, cigar, or exhaled by smokers creates secondhand smoke. Even brief exposure to secondhand smoke puts children and adults at risk because of the thousands of chemicals released into the air, including 70 that cause cancer.[1] It increases the risk for heart attacks, heart disease, stroke, lung cancer, and can aggravate asthma and other breathing problems including pneumonia and bronchitis. There is no safe level of secondhand smoke exposure.[2] Electronic cigarettes, or e-cigarettes, are considered a tobacco product. While e-cigarettes do not contain smoke, they do expose others to secondhand emissions (including carcinogens and other toxins), resulting in the American Lung Association and the U.S. Surgeon General expressing concern about their impact on health.[3]

HOW WE ARE DOING

Reported exposure to secondhand smoke among Minnesota adults has declined since 2003. In 2014, exposure varied greatly by setting, with adults reporting more exposure to secondhand smoke in the community at large (31.7 percent) than in a car (6.9 percent) or at home (3.2 percent). The most commonly reported location for community exposure is a building entrance (20percent) followed by "somewhere outdoors" (16.5 percent) and the outdoor patio of a restaurant or bar (12.7 percent). There was a significant decline in "past seven-day" exposure to secondhand smoke in vehicles, as well as a slight decline in home settings.[4]

While smoke-free laws in workplaces and public buildings have greatly reduced exposure to secondhand smoke, nearly half of nonsmoking students in MN are exposed to secondhand smoke (47 percent in 2013 and 46 percent in 2016), with repeated exposure (defined as 3 or more days out of the last 7) being most likely in the home.[2]

In Ramsey County, the percent of 5th graders reporting being in the same room or in the car with someone smoking cigarettes has remained about the same between 2013 and 2016. During that time, however, the exposure for white students has decreased while the exposure for students of color has increased.[5]

BENCHMARK INDICATOR

Healthy People 2020[6]:

1) Reduce the proportion of adults (18+ years) exposed to secondhand smoke.
U.S. Target: 33.8 percent.

2) Reduce the proportion of children (ages 3 to 11 years) exposed to secondhand smoke.
U.S. Target: 47 percent.

3) Reduce the proportion of children (ages 12 to 17 years) exposed to secondhand smoke.
U.S. Target: 41 percent.

Information to note

- Nonsmoking Minnesota adults are significantly more likely to be exposed to secondhand smoke in the community at large than in a car or at home.
- Ramsey County 5th grade students of color are more likely to be exposed to secondhand smoke than white students.

Community voice

"Smoking, second hand smoke."
- Karen Male, age 20-24

Although few respondents stated secondhand smoke; when discussing air quality and smoking habits many respondents indirectly stated that they were being exposed to secondhand smoke.

[1] Secondhand Smoke Facts. Centers for Disease Control and Prevention. https://www.cdc.gov/tobacco/basic_information/secondhand_smoke/index.htm. Accessed July 2, 2018.
[2] Tobacco Data. Minnesota Department of Health. http://www.health.state.mn.us/divs/hpcd/tpc/docs/tobacco_data.pdf. Accessed May 16, 2018.
[3] E-cigarettes and Lung Health. American Lung Association. http://www.lung.org/stop-smoking/smoking-facts/e-cigarettes-and-lung-health.html. Accessed June 24, 2018.
[4] Tobacco Use in Minnesota: 2014 Update. Minneapolis, MN: ClearWay Minnesota. 2014. http://clearwaymn.dreamhosters.com/wp-content/uploads/2015/01/MATS_2014_Technical_Report.pdf. Published January 2015. Accessed May 18, 2018.
[5] Minnesota Student Survey, Saint Paul- Ramsey County Public Health data set.
[6] Tobacco Use. Healthy People 2020. https://www.healthypeople.gov/2020/topics-objectives/topic/tobacco-use/objectives. Accessed June 29, 2018.

DISPARITIES

Duration of exposure to secondhand smoke varies by age, gender, education and income.[7] Adults aged 45 – 64 and males reported shorter exposure than all other age groups and females. People with college degrees reported significantly shorter exposure times than other education levels. Adults making $75,000 or more per year also reported significantly less secondhand smoke exposure than those making less than $50,000.

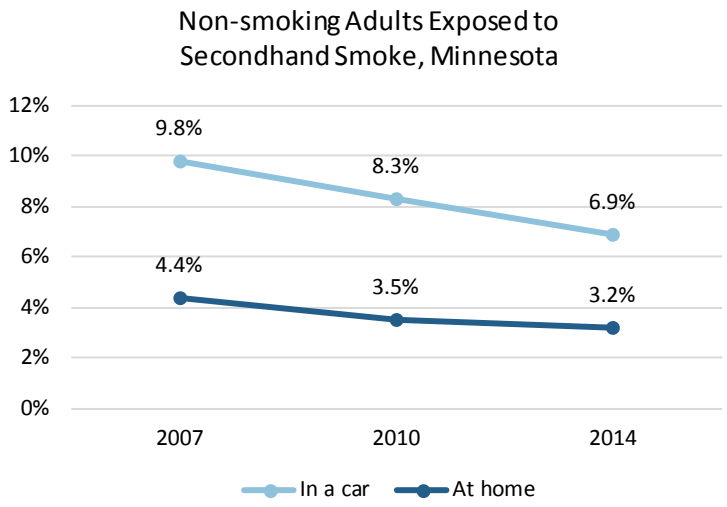
RISK FACTORS

Children are particularly vulnerable to the risks of secondhand smoke because they are still developing and are less able to control their surroundings. They may be at increased risk for secondhand smoke-related disease and illness, and infants are at a greater risk for sudden infant death syndrome (SIDS).[8]

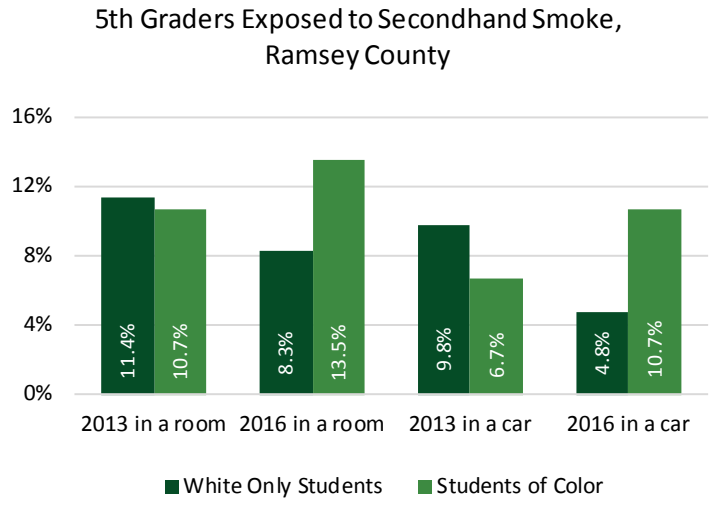
WHAT RAMSEY COUNTY IS DOING

To help prevent adverse health effects of cigarettes and e-cigarettes in public spaces, the Ramsey County Clean Indoor Air Ordinance was passed in November 2015. It prohibits the use of electronic cigarettes (or e-cigarettes) in public spaces where cigarette smoking is currently prohibited under the Minnesota Clean Indoor Act, as well as prohibiting vaping or smoking within 25 feet of public building entrances.

Saint Paul – Ramsey County Public Health responds to violations of the Minnesota Clean Indoor Air Act in licensed establishments in the county. In addition, public health's Tobacco-Free Living Initiative partners with the American Lung Association to educate managers and owners of multi-unit housing on the dangers of smoking and secondhand smoke, and how to create smoke-free environments in their buildings.



Source: ClearWay Minnesota & Minnesota Department of Health.[9]



Source: Minnesota Student Survey. Ramsey County data set.

[7] Tobacco Use in Minnesota: 2014 Update. Minneapolis, MN: ClearWay Minnesota and Minnesota Department of Health; January 2015. http://www.mntobacco.nonprofitoffice.com/vertical/Sites/%7B988CF811-1678-459A-A9CE-34BD4C0D8B40%7D/uploads/MATS_2014_Technical_Report_Final_2015-01-21.pdf. Accessed May 18, 2018.

[8] Tobacco Data. Minnesota Department of Health. http://www.health.state.mn.us/divs/hpcd/tpc/docs/tobacco_data.pdf. Accessed May 16, 2018.

[9] The Minnesota Adult Tobacco Survey https://mntobacco.nonprofitoffice.com/index.asp?Type=B_BASIC&SEC={ECE0A1FF-DC5A-4C9C-AA08-8E9A97B14D07}. Accessed May 18, 2018.

Small Particulate Matter

DESCRIPTION

Small particles in outdoor air (also known as $PM_{2.5}$) and ozone are the primary causes of poor air quality in Minnesota. $PM_{2.5}$, a mixture of small particles and liquid droplets smaller than 2.5 microns in diameter (less than 1/30 the width of a human hair), is released when coal, gasoline, diesel fuels, wood and other fuels are burned. It is also created by chemical reactions between other pollutants in the air.[1] Being exposed to any kind of particulate matter may cause heart problems and decreased lung function, worsened asthma symptoms, adverse birth outcomes, breathing problems, decreased lung growth in children, lung cancer and early death.[2]

HOW WE ARE DOING

Overall, the number of "good" air quality days in Ramsey County has increased, while the number of "moderate" and unhealthy days has decreased. Ramsey County has not seen an "unhealthy" day (55.5-150.4µg/m^3) since 2005. The number of unhealthy days is somewhat variable, as it is driven by year-to-year differences in weather conditions that increase air pollution, such as temperature, humidity and wind. Further, increases in fine particle pollution can be caused by unhealthy air being blown into Minnesota from other states.[3]

Between 2006 and 2016, the federal standard for $PM_{2.5}$ has been exceeded once. Based on particulate matter, the air quality in Ramsey County has improved in recent years. In Saint Paul, fewer than 1 percent of all days, on average, are unhealthy for fine particle pollution.

BENCHMARK INDICATOR

U.S. Environmental Protection Agency:[3]
1) Reduce 24-hour small particles ($PM_{2.5}$) in outdoor air.
U.S. Target: 35 µg/m^3
2) Reduce annual small particles (PM2.5) in outdoor air.
U.S. Target: 12 µg/m^3

DISPARITIES

Some communities may be more at risk for heart and lung problems related to air pollution. Examples include: high rates of poverty, high numbers of people without health insurance, high obesity and diabetes prevalence, high rates of smoking, higher amounts of car and truck exhaust due to greater population density, and proximity to factory emissions and other sources of exposure.[2]

RISK FACTORS

Those especially sensitive to air pollution include: individuals with pre-existing lung or heart disease, the elderly, children, and participants in activities that require heavy or extended exertion. These risk factors are associated with more heart and lung problems, hospital visits, and deaths in areas with high amounts of air pollution.[4]

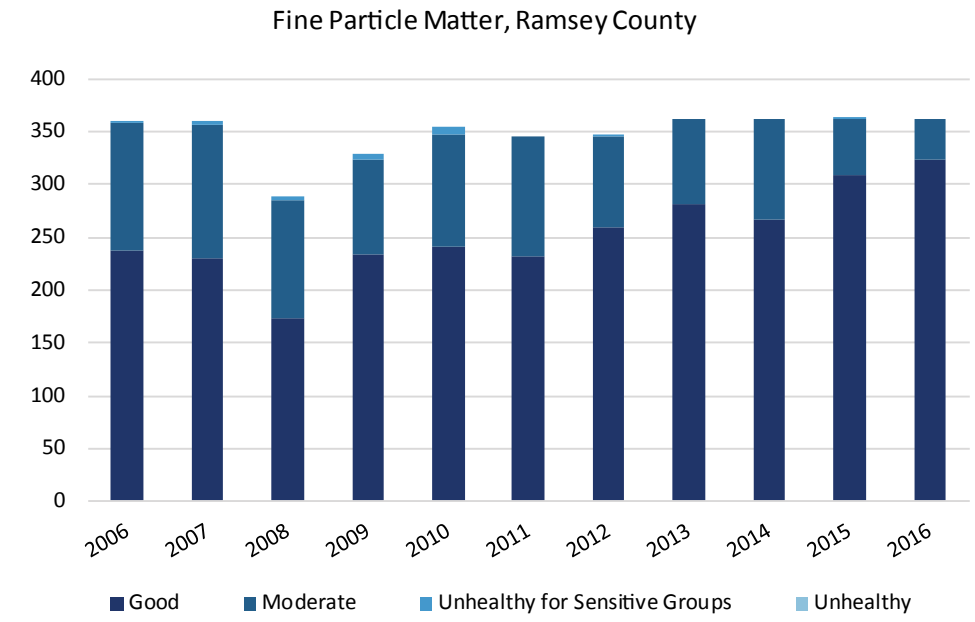
WHAT RAMSEY COUNTY IS DOING

Through its website, Ramsey County shares alerts with the public when fine particles are expected to reach unhealthy levels. In partnership with "Be Air Aware," it also shares advice for staying healthy during periods of poor air quality, such as avoiding prolonged outdoor physical activity.

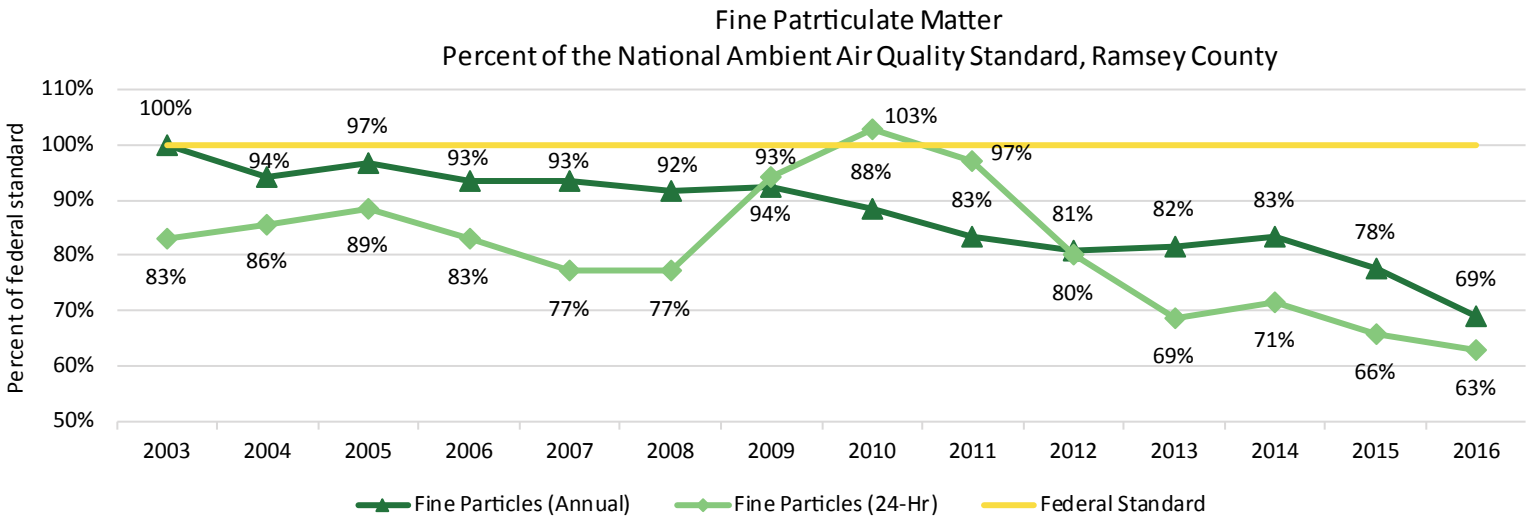
Information to note

- The burning of coal, gasoline, diesel fuels, wood and other fuels creates pollution particles small enough to get deep into the lungs and the bloodstream.
- The air quality in Ramsey County has been improving in recent years.

[1] Air Quality Index: facts and figures. Minnesota Department of Health. https://apps.health.state.mn.us/mndata/air. Accessed November 29, 2017.
[2] Health Impacts of Fine Particles in Air. Centers for Disease Control and Prevention. https://ephtracking.cdc.gov/showAirHIA.action. Accessed November 29, 2017.
[3] Fine particle pollution. Minnesota Pollution Control Agency. https://www.pca.state.mn.us/sites/default/files/aq8-25.pdf. Published June 2013. Accessed November 29, 2017.
[4] About the Air Quality data: Health effects associated with poor air. Minnesota Pollution Control Agency. https://www.pca.state.mn.us/air/about-air-quality-data. Accessed January 16, 2018.



Source: Minnesota Polution Control Agency



Source: Minnesota Pollution Control Agency

Solid Waste Management

DESCRIPTION

Minnesota law includes a hierarchy of methods to manage waste that includes reduction and reuse (most preferred), recycling and composting, energy recovery, and land disposal (least preferred).[1] Acknowledging that land disposal is the least preferred method of waste management, Ramsey County is committed to managing waste in better ways.

The Minnesota Pollution Control Agency (MPCA) is responsible for establishing solid waste policy and planning in accordance with Minnesota's Waste Management Act.[2] The MPCA prepares a policy plan every six years with input from state agencies, county staff, and a variety of stakeholders.[3] Counties are responsible for a number of activities such as developing policy and adopting ordinances; financing the waste-management system; ensuring technical, financial and other support for partners (including cities, school districts, and other private and non-profit entities); and providing collection and management of certain materials. Through the Recycling & Energy Board, Ramsey and Washington Counties work together on solid-waste management, focusing on getting the most value out of what is thrown away, increasing recycling and reducing the amount discarded.[4]

There are specific 5-year objectives to reduce land disposal of waste through 2036. The MPCA objectives include targets for waste reduction, recycling, organics recovery, resource recovery and landfilling. Minnesota Statute[2] also establishes a goal for metro counties to ensure that 75% of solid waste generated is recycled (including organics that are composted) by 2030.

HOW WE ARE DOING

Ramsey County diverted 87% of discarded material (waste recycled, composted and resource recovery) from landfills in 2016. During 2007-2016, the percentage of discarded waste managed as recycling or organics has risen steadily, largely due to increased organics-management efforts (e.g., residential drop-offs, food-to-hogs programs, yard waste collection, etc.). From 2007-2016, an average of 36% of discarded material was used for resource recovery (defined as the recovery of energy and usable materials during the processing of mixed municipal solid waste).[2]

BENCHMARK INDICATOR

Healthy People 2020: Increase the percent of municipal solid waste recycled.
U.S. Target: 36.5 percent.
MN Metro County Targets: 63% recycled by 2020; 68% recycled by 2025; 75% recycled by 2030; 2% landfilled by 2020; 1% landfilled by 2025.

WHAT RAMSEY COUNTY GOVERNMENT IS DOING

With the purchase of the Recycling & Energy Center in Newport (R&E Center) completed January 1, 2016, Ramsey County is taking significant steps towards meeting both the metro policy plan objectives and the 2030 legislative goal of 75% recycling. Ramsey County has started directing all Ramsey and Washington County trash to the R&E Center by diverting most waste that would have been landfilled and by removing more materials for recycling. Ramsey and Washington Counties, through the Recycling & Energy Board, are also

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Information to note

- From 2007-2016, Ramsey County reduced the amount of waste landfilled from 22% to 13%.
- Since 2008 Ramsey County recycling rates have met or exceeded both state and national targets.

Community voice

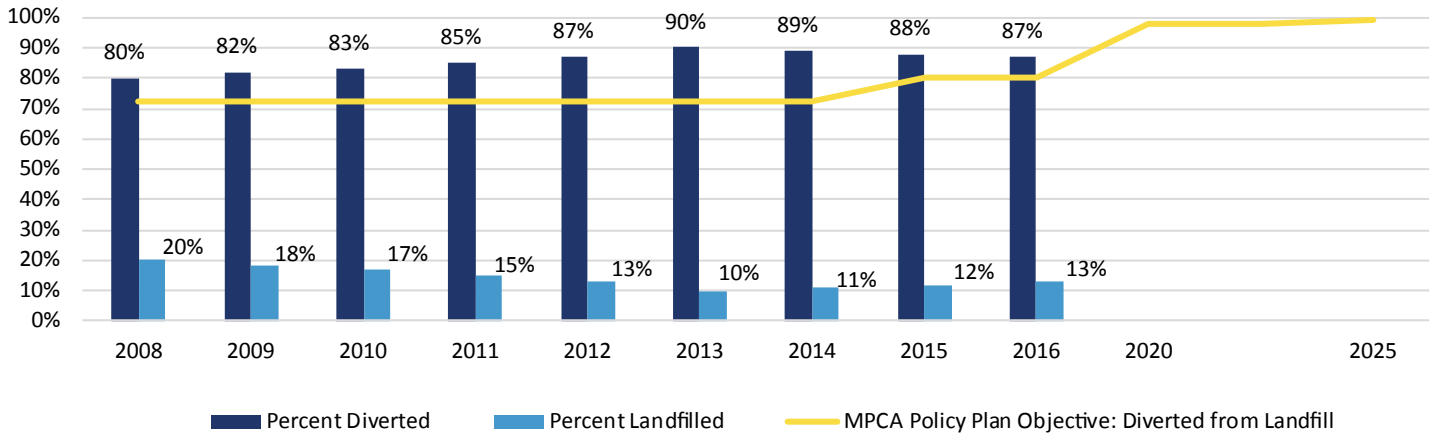
"Dirty environment and trash all over the place."
- Filipino Female, age 55-64

190 respondents mentioned waste and littering as affecting community's health. Of these, 91% (174) stated waste management, community cleanliness, trash collection, and recycling were essential in keeping their community healthy.

[1] 2015 Solid Waste Policy Report. Minnesota Pollution Control Agency. https://www.pca.state.mn.us/sites/default/files/lrw-sw-1sy15.pdf. Published January 2016. Accessed December 18, 2017.
[2] Minnesota Statutes 2017, section 115A.551. https://revisor.mn.gov/statutes/?id=115A&view=chapter#stat.115A.551. Accessed June 29, 2017.
[3] Metropolitan Solid Waste Management Policy Plan. Minnesota Pollution Control Agency. https://www.pca.state.mn.us/waste/metropolitan-solid-waste-management-policy-plan. Accessed December 18, 2017.
[4] Connecting value to waste. Ramsey/Washington Recycling and Energy Board. http://morevaluelesstrash.com/. Accessed December 18, 2017.

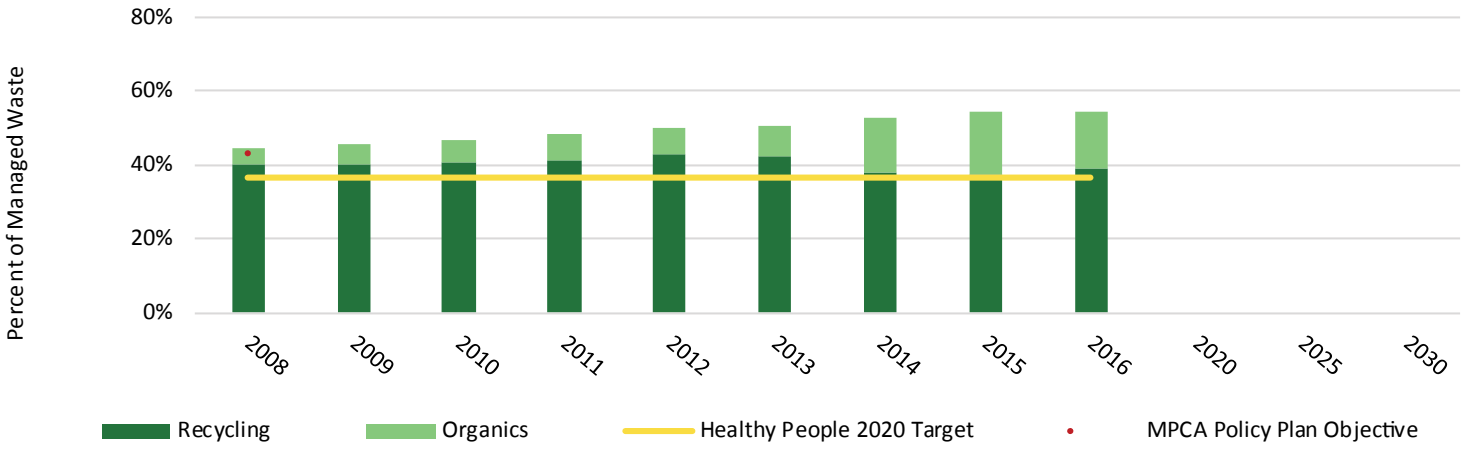
expanding and improving programs to help businesses start, expand, improve, and manage recycling, including organics collection, through on-site consultations, technical assistance, expert advice, guidance and grant funding.[5]

Solid Waste Diversion from Landfill, Ramsey County



Source: Saint Paul – Ramsey County Public Health

Waste Managed as Recycling or Organics, Ramsey County



Source: Saint Paul – Ramsey County Public Health

[5] BizRecycling: Less Trash, More Savings. http://www.bizrecycling.com/. Accessed December 18, 2017.