

City of Pleasant Ridge
23925 Woodward Avenue
Pleasant Ridge, Michigan 48069

**City Commission Meeting
August 8, 2017
Agenda**

Honorable Mayor, City Commissioners and Residents: This shall serve as your official notification of the Public Hearing and Regular City Commission Meeting to be held Tuesday, August 8, 2017, at 7:30 p.m., in the City Commission Chambers, 23925 Woodward Avenue, Pleasant Ridge, Michigan 48069. The following items are on the Agenda for your consideration:

PUBLIC HEARING AND REGULAR CITY COMMISSION MEETING – 7:30 P.M.

1. **Meeting Called to Order.**
2. **Pledge of Allegiance.**
3. **Roll Call.**
4. **Southeast Michigan Regional Energy Office (SEMREO) Program Updates.**
5. **PUBLIC DISCUSSION – items not on the Agenda.**
6. **Governmental Reports.**
7. **City Commission Liaison Reports.**
 - **Commissioner Krzysiak – Recreation Commission.**
 - **Commissioner Scott – Historical Commission.**
 - **Commissioner Foreman – Ferndale Public Schools.**
 - **Commissioner Perry – Planning/DDA, Committee Liaison.**
8. **Consent Agenda.**

All items listed on the Consent Agenda are considered to be routine by the City Commission, will be enacted by one motion and approved by a roll call vote. There will be no separate discussion of these items unless a City Commissioner or visitor so requests, in which event, the item will be removed from the consent agenda and considered as the last item of business.

 - a. Minutes of the Regular City Commission Meeting held Tuesday, July 11, 2017.
 - b. Monthly Disbursement Report.
 - c. Resolution regarding September as National Recovery Month.
 - d. Scheduling a public hearing on Tuesday, September 12, 2017, at 7:30 p.m., to solicit public comments on an ordinance regarding DAS/Small Cell/Wireless Facilities in Public Rights-of-Way.
 - e. Resolution for the creation of a Municipal Employees Retirement Systems (MERS) Defined Contribution Retirement Plan.

9. **Ordinance to amend Chapter 74, Utilities, Article II, Water, by the addition of a new division; Division 5 – Water System Extensions and Chapter 74, Utilities, Article III, Sewers, by the addition of a new division; Division 5 – Sewer System Extensions.**
 - a. **Public Hearing** – Solicitation of public comments on an ordinance to amend Chapter 74, Utilities, Article II, Water, by the addition of a new division; Division 5 – Water System Extensions and Chapter 74, Utilities, Article III, Sewers, by the addition of a new division; Division 5 – Sewer System Extensions.
 - b. Ordinance to amend Chapter 74, Utilities, Article II, Water, by the addition of a new division; Division 5 – Water System Extensions and Chapter 74, Utilities, Article III, Sewers, by the addition of a new division; Division 5 – Sewer System Extensions.

10. **Ordinance to amend Chapter 14 Building and Building Regulations, Article V, Fences, Section 117, Front Yard Fences.**
 - a. **Public Hearing** – Solicitation of public comments on an ordinance to amend Chapter 14 Building and Building Regulations, Article V, Fences, Section 117, Front Yard Fences.
 - b. Ordinance to amend Chapter 14 Building and Building Regulations, Article V, Fences, Section 117, Front Yard Fences.

11. **City Manager’s Report.**

12. **Other Business.**

13. **Adjournment.**

In the spirit of compliance with the Americans with Disabilities Act, individuals with a disability should feel free to contact the City at least seventy-two (72) hours in advance of the meeting, if requesting accommodations.



City of Pleasant Ridge

James Breuckman, City Manager

From: Jim Breuckman, City Manager
To: City Commission
Date: August 3, 2017
Re: Southeast Michigan Regional Energy Office (SEMREO) Program Updates

Overview

Rick Bunch, executive director of SEMREO, will present updates on past, current, and future SEMREO initiatives at the August 8 City Commission meeting.

Background

MI-MAUI Organization

SEMREO, through the Municipal Streetlighting Coalition, has achieved a positive outcome from the DTE streetlighting rate case before the Michigan Public Service Commission (MPSC). Mr. Bunch will provide an update on the results of that rate case resolution, along with future rate cases that DTE may bring.

The streetlighting coalition was a purpose-driven group that was formed and funded to address the one DTE rate case. That case has concluded, but DTE will certainly bring more cases in the future. SEMREO is now proposing to form the Michigan Municipal Association for Utility Issues (MI-MAUI) as a successor organization to the streetlighting coalition. This would be an ongoing organization that can engage with utilities, monitor and, if necessary, intervene in MPSC proceedings that impact municipal interests, and provide technical and financial advice and support to municipalities.

Pleasant Ridge's annual membership fee is proposed at \$250. Given that we pay over \$36,000 annually to DTE for streetlighting, staff believes that this is a reasonable interest to monitor and protect our interests in Lansing regarding utility issues.

Please see the attached MI-MAUI overview for more detailed information.

Aggregate Residential Solar Purchasing Program

SEMREO is also in the process of rolling out a solar program that offers a turnkey solution for homeowners who want to go solar. By aggregating a large number of jobs, SEMREO and their partners can offer competitive pricing. SEMREO has partnered with Michigan Solar Solutions to do the solar installations and McNaughton-McKay Electric to supply the materials.

There is no cost to the City to participate in the program, and residents may choose to use the SEMREO solution or to contact any other solar installer of their choice.

The City is in the process of reviewing our solar regulations. Currently, solar energy systems are only allowed where they are not visible from the street. However, with the majority of our streets running east-west, this means that nearly half of our residents are not allowed to install solar equipment on their south-facing façade. This fact does not preclude us from participating in the SEMREO program, but the Commission should be aware that we have a current limitation that we must review. After the Planning Commission finishes their review process, they will either confirm the current restrictions, or recommend an ordinance to amend the solar restrictions. This process will likely take 3 to 4 months to complete.

Requested Action

No action is requested at this time. If the City Commission is interested in participating in the developing SEMREO initiatives, staff will prepare resolutions for City Commission consideration at an upcoming meeting.



Helping Southeast Michigan Homeowners Go Solar

EXECUTIVE COMMITTEE

Chair

David Norwood
City of Dearborn

Vice Chair

Chris Rayes
City of St. Clair Shores

Treasurer

Tony Lehmann
City of Huntington Woods

Secretary

Hon. Valerie Kindle
City of Harper Woods

Directors

Luke Forrest
Michigan Municipal League

Allison Harris
EcoWorks Detroit

MUNICIPAL MEMBERS

Dearborn
Eastpointe
Farmington
Ferndale
Grosse Pointe
Grosse Pointe Shores
Grosse Pointe Woods
Hazel Park
Highland Park
Huntington Woods
Lathrup Village
Lincoln Park
Madison Heights
Mount Clemens
Pleasant Ridge
River Rouge
Roseville
Royal Oak
St. Clair Shores
South Lyon
Southgate
Sterling Heights
Warren
Washtenaw County
Wayne
Ypsilanti

Homeowners interested in solar energy may hesitate because of the need to choose among numerous installers and fast-changing technologies, concerns about reliability of equipment and projected savings, and limited understanding of building codes and other regulations. The Southeast Michigan Regional Energy Office (SEMREO) has assembled a low-cost, turnkey solar photovoltaic (PV) package that includes local providers and installers with optional financing, available exclusively to its member municipalities. By supporting this program, municipalities can increase homeowners' confidence and reduce their installation costs while supporting local businesses.

Key features

- **Lower costs:** SEMREO reduces equipment and installation costs for homeowners by purchasing and contracting in bulk.
- **Buy Michigan:** Equipment for the program is provided by McNaughton-McKay Electric (Madison Heights) and installations are performed by Michigan Solar Solutions (Commerce Township), both of which hire and train local labor.
- **Convenience:** Homeowners can rely on SEMREO's vetting and management of providers, rather than evaluating everything by themselves.
- **Quality and compliance:** Michigan Solar Solutions is one of the largest, most experienced local installers and is thoroughly versed in code requirements.
- **Trusted voice:** SEMREO represents the interests of its municipal members.

Advantages for participating municipalities

Southeast Michigan municipalities that promote clean, renewable energy are attractive to residents and businesses who want a community that invests in its future. Guiding property owners toward high quality, reliable providers and technology will have a multiplier effect, as satisfied customers influence their friends and neighbors to follow suit. On an administrative level, municipalities can better support property owners during permitting and other processes if equipment and installation come from trusted, familiar providers.

Municipal commitment

- **Endorse** the program via resolution or other official statement.
- **Promote** the program as a municipal offering through municipal communication channels, such as the City website, email communication to residents, newsletters, print materials at kiosks, and so forth. SEMREO will provide all materials and content to be used with municipal branding.
- **Encourage** building inspectors to attend SEMREO's solar PV workshops.

Municipal commitment does **NOT include** signing any contracts or allocating any funds towards the program.

For more information and to sign-up, please contact: Rick Bunch, SEMREO Executive Director, rick@regionalenergyoffice.org, (313) 749-8750



Residential Solar PV Costs and Benefits Illustration

Year	Cash Flow
0	(\$9,456.05)
1	\$921.59
2	\$976.89
3	\$1,035.50
4	\$1,097.63
5	\$1,163.49
6	\$1,233.30
7	\$1,307.29
8	\$1,385.73
9	\$1,468.88
10	\$1,557.01
11	\$1,650.43
12	\$1,749.45
13	\$1,854.42
14	\$1,965.69
15	\$2,083.63
16	\$2,208.65
17	\$2,341.17
18	\$2,481.64
19	\$2,630.53
20	\$2,788.37
21	\$2,955.67
22	\$3,133.01
23	\$3,320.99
24	\$3,520.25
25	\$3,731.46

Net upfront cost

Avoided cost of DTE electricity in 1st year.

Savings grow in line with 6% annual increase in cost of electricity.

Equipment is warranted for 25 years but will likely last much longer.

Investment Metrics	
Net value to homeowner (NPV)	\$15,187
Payback	8.2 years

Assumptions	
Current electricity rate (\$/kWh)	\$0.165
Annual increase in \$/kWh (avg. since 2006)	6%
Financing rate	5%
Federal tax credit	30%
Typical usage for home in SE Michigan (kWh/month)	535
Usage to be offset with solar	87%
Avg. electricity offset (kWh/month)	465

Homeowners can offset further electricity needs with easy, additional energy savings projects.

Cost Calculation	
System design, parts, permit, labor	\$12,744.00
Sales tax	\$764.64
Contract amount	\$13,508.64
Federal tax credit (30%)	(\$4,052.59)
Net upfront cost	\$9,456.05



Michigan Municipal Association for Utility Issues

Municipalities in Michigan have too little control over energy costs, providers and technologies

Energy costs can eat up 5% or more of a municipality's budget, leading many to pursue energy efficiency and renewable energy initiatives in hopes of cutting costs, reducing environmental impacts and improving quality of life. Unfortunately, many attractive energy projects aren't feasible for municipalities because of regulatory or ownership barriers. For example, conversion to LED streetlights in Michigan has gone slower than many municipalities would like because utilities own the fixtures and thus control the pace of conversion, as well as what wattage and brand of LED are installed.

Likewise, municipalities have little control over energy costs because they generally cannot choose their energy providers, and prices are set by the Michigan Public Service Commission rather than through direct negotiation with the providers in a competitive market.

Finally, most municipalities lack expertise and capacity on staff to negotiate effectively with utilities about priorities, technology choices and costs of energy infrastructure projects.

Municipal budgets remain tight. It is widely recognized that good energy management can sharply reduce costs, yet many solutions are either unavailable to municipalities or very difficult to pursue. A shared resource is needed to give municipalities a stronger voice in regulatory proceedings, and more effective representation in their business relationships with utilities.

The Michigan Street Lighting Coalition provides a proven model for giving municipalities a voice in management of energy

The MSLC formed in 2014 to challenge changes to street lighting tariffs proposed to the Michigan Public Service Commission (MPSC) by DTE Energy, which would have reduced the savings municipalities can realize by investing in LED streetlight conversions. Twenty-five municipalities in southeast Michigan joined the Coalition, which SEMREO managed, retaining attorneys, expert witnesses and clean energy experts. Following extensive analysis and testimony, the MPSC rejected DTE's proposal and mandated a collaborative process. Over the following months, the MSLC team worked directly with DTE Energy and MPSC staff to craft fair and reasonable tariffs that reward municipal energy efficiency investments, which were approved by the MPSC on January 31, 2017.

MSLC's intervention increased potential savings from LED conversion dramatically. A city with 1,000 DTE-owned streetlights distributed among incumbent technologies (mercury



vapor and high-pressure sodium), wattages and wiring types representative of the region-wide DTE system will be able to save about \$27,000 more per year by converting 100% to LEDs under the newly approved streetlight tariffs, compared to the rates DTE originally proposed. The new rates also offer better return on investment in LED conversions than the experimental LED rates that were in effect until now – protecting the projected return on investment of cities that already installed LEDs. We estimate that over 98% of older-technology streetlights owned by DTE could be converted to LEDs with annual savings that pay back the city’s conversion expense in less than five years.

These significant, annual savings were cheaply won: our hypothetical, “average” city would have contributed about \$3,500 to MSLC dues over two years, meaning it has received a greater than tenfold annual return on its investment.

Municipalities need ongoing, not episodic, representation in utility issues

Despite these solid victories, many issues related to streetlight tariffs, conversion costs and policies, and technology choices remain before us. DTE, for example, has no plans for converting approximately 70,000 high-pressure sodium streetlights to LED, even though each converted light would cost municipal customers \$41-to \$184 less per year to operate under the new tariffs. Also, LED streetlights can support various “smart grid” and “smart urban network” functions, and municipalities need to be deeply involved in discussing how these opportunities are pursued.

MAUI’s agenda is not devoted only to streetlight issues, either. Municipalities receive many other regulated electric and gas services from utilities. Salient issues related to clean energy include utility and regulatory policies for municipal microgrids; for siting and net metering of solar PV or other renewable energy installations serving municipal facilities; and for gas and electric costs for municipal facilities. The organization may also tackle energy facility siting policies and decisions (e.g., utility-scale solar PV and wind turbine placement).

Without expert and regular municipal engagement, policies, regulations and costs of municipal clean energy initiatives will continue to be shaped primarily by utilities and regulators, who may have other interests in mind. No single municipality has the information, expertise and resources to meaningfully balance a utility company’s influence in regulatory matters or its knowledge and motivation in business negotiations. Thanks to our successes in the MPSC rate cases, MSLC has momentum, credibility, experience and a team to tackle these issues and level the playing field for



municipalities, but structural changes are needed to move away from MSLC's single-issue campaign model to a standing association model.

The Michigan Municipal Association for Utility Issues (MI-MAUI)

By bundling resources and clout, and retaining experts in economics, energy and regulation, the Association will give municipalities a stronger voice in energy utility issues. General services will include:

- Engage regulated utilities in ongoing dialogue on regulatory and business policy issues related to clean energy programs, to identify issues of common concern and collaboratively craft solutions;
- Monitor, and participate when necessary in MPSC and other utility regulatory proceedings that impact municipalities' ability to pursue money-saving clean energy projects. However, MAUI will emphasize collaboration with utilities in preference to intervention in regulatory processes;
- Provide technical and financial advice and support to municipalities in their business relationships with utilities.

The Association's core mission will be to save money for municipalities by making clean energy projects pay, but it may engage with other utility issues when they arise incidental to its priority agenda. A relevant example would be MSLC's advocacy for fair and gradual rebalancing of the difference between DTE's tariffs for streetlights served by overhead and underground wiring: this issue had no energy efficiency implications but MSLC was the logical, and only, party able to represent municipal interests on that issue.

The Association will not engage directly in advocacy activities, but may cooperate with partners such as Michigan Municipal League, Michigan Townships Association, and non-profit energy and environmental organizations to advance relevant policy proposals.

Issues: Members will set the Association's priorities and assess themselves fees to cover necessary expenses in excess of the annual membership assessment. The scope is expected to remain focused on electricity and gas services provided by regulated utilities in Michigan.

Service area: Geographically, whereas MSLC has focused on the DTE Energy service territory, the Association will represent municipalities served by regulated utilities throughout the state. Doing so will allow us to apply lessons learned statewide, even



out the work flow from year to year, and get to a politically and financially effective scale faster.

Structure: The Association will have a membership structure and will be organized as a Board subcommittee of Southeast Michigan Regional Energy Office. All members will have voting participation in the Association's priorities, leadership elections and budgeting. SEMREO will staff and administer the Association, and will retain legal, regulatory and technical experts as authorized by the Association membership.

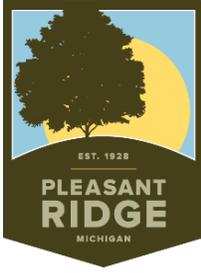
Membership: Cities, villages, townships, counties and other local government agencies in Michigan are eligible to join the Association. Municipal associations (including MML, MTA and MAC) and non-profit organizations that support municipal energy programs (including EcoWorks, SEEDS, Michigan Energy Options, Clean Energy Coalition, Michigan SAVES, NextEnergy and Metro Matters) may join as Associate Members without voting privileges.

Dues: Initial membership dues for the Association will be \$0.05 per resident; for example, a municipality with population of 10,000 will have initial dues of \$500. Minimum dues will be \$250 and maximum will be \$6,000.

Dues have been calculated to support a baseline, startup agenda. Association members may vote to undertake a broader program agenda or service offerings, or to intervene in MPSC rate case(s). To expedite implementation of these decisions, municipalities are asked to allow their staff to contribute up to a specified additional amount, suggested as equal to the initial dues, during the first year of the association.

Contact

Rick Bunch, Executive Director, Southeast Michigan Regional Energy Office
rick@regionalenergyoffice.org, (m)206-595-8293



City of Pleasant Ridge
23925 Woodward Avenue
Pleasant Ridge, Michigan 48069

**Regular City Commission Meeting
July 11, 2017**

Having been duly publicized, Mayor Metzger called the meeting to order at 7:34 p.m.

Present: Commissioners Foreman, Krzysiak, Perry, Scott, Mayor Metzger
Also Present: City Manager Breuckman, City Attorney Need, City Clerk Drealan
Absent: None

Public Discussion

Michael Valentine, 65 Sylvan, discussed the Front Porch Concert Series in Ferndale. It was well received by all. He suggested that potentially Pleasant Ridge could host a similar event. There was discussion about the logistics of coordinating such an event. He asked whether there had been any discussion regarding a bridge connecting Iron Ridge with the Park. City Manager Breuckman indicated that there has been some discussion but there are some difficult structural issues to overcome. Mr. Valentine noted that the basketball courts are being well utilized and is waiting for signage to be installed.

Governmental Reports

Gary McGillivray, Oakland County Commissioner, noted that he and Commissioner Janet Jackson will be sponsoring a forum on August 9, 2017, to make sure that all Oakland County businesses know how they can bid on county projects. It will also inform entrepreneurs about the demographic information available at the county to assist in business planning. The County fair is ongoing. He encouraged everyone to use the parks, golf courses, wave pools and campgrounds in the county.

Kevin Nowak, Police Chief, noted that on July 1, 2017, Ferndale Police began dispatching for Pleasant Ridge. The system operates the same way as it did before. Residents need to notify their alarm companies to use the Ferndale number - 248-541-3650. He thanked Berkley for their years of cooperation. The department participates in a gun safety lock program through the County which provides gun locks at no cost to residents who need them. The department has many gun locks available to donate. He also noted that the basketball courts are being well-utilized and everyone is generally well behaved.

City Commission Liaison Reports

Commissioner Perry reported on the Planning Commission/DDA. DDA District businesses gathered for a happy hour on June 14, 2017, sponsored by Cork Wine Pub. Current and future projects were discussed including façade improvement, the planter program and sidewalk improvement. Attending the quarterly meetings was encourage. They also discussed coordinating holiday lights. Next meeting is July 24, 2017 at 7:00 p.m.

Commissioner Krzysiak reported on the Recreation Commission. Ice cream social will be held at the pool on Wednesday, July 19 at 6:00 p.m. Adult only swim nights are scheduled for July 26 and August 23 at 6:00 p.m. Adult swim meet will be held on Tuesday, August 1 at 7:30. Six events are planned. The Family Campout is August 12th beginning at 4:00 p.m. at Gainsboro Park. There is a \$25.00 cost per family. The price includes dinner and breakfast. Sign up before July 31, 2017. Assistant City Manager Pietrzak noted that the swim team is doing well. There are 109 children registered for the summer playground camp. The check in program works very well and shows that 68.2 children are checking into the park every day. The community center project is moving forward. Construction will start after Labor Day. There have been 691 gym fobs issued. This should result in significant staffing savings in the future. The PR Royals little league team was recognized for its accomplishments.

Commissioner Scott reported on the Historical Commission. The Commission is on its summer break. There is an event on August 2nd discussing the history of the pool. The next regular meeting is September 6. John Wright commented on the fifty-year history of the pool. Any pictures can be dropped off to use in the presentation.

Commissioner Foreman reported on Ferndale Public Schools. The new superintendent will host a meet and greet on July 26 at 6:30 p.m. There are some energy improvements happening through the district including lighting upgrades, boiler replacements, and expanded use of timers. The next school board meeting is on July 17.

Consent Agenda

17-3317

Motion by Commissioner Perry, second by Commissioner Foreman, that the Consent Agenda be approved as presented.

Adopted: Yeas: Commissioners Perry, Foreman, Krzysiak, Scott, Mayor Metzger
 Nays: None

Proposed language to be placed on the ballot of the General Election to be held on Tuesday, November 7, 2017, regarding a Police Pension Millage

17-3318

City Manager Breuckman noted that there is a pension funding problem that has been discussed at previous meetings. The purpose of the millage is to eliminate the unfunded liability from past pension plans. Changes in current pension plans will put the path of sustainability going forward. The proposal is to authorize an additional 1.4 mills over 15 years to fund the currently underfunded police

pension. It will be phased in over four years. Commissioner Foreman asked how the progress on funding the pension will be tracked. There is an annual report from MERS that is available on the website. Commissioners Krzysiak and Perry noted that this millage will not fund future pensions. It will only allow the city to pay for the pensions that were authorized in the past.

Motion by Commissioner Foreman, second by Commissioner Scott, to approve that the ballot proposal as presented be approved and forwarded to the State and County for review and placements on the November 7, 2017, general election ballot.

Adopted: Yeas: Commissioners Perry, Foreman, Krzysiak, Scott, Mayor Metzger
 Nays: None

Scheduling a public hearing on Tuesday, August 8, 2017, at 7:30 p.m., to solicit public comments on an ordinance to amend Chapter 14 Building and Building Regulations, Article V, Fences, Section 117, Front Yard Fences

17-3319

City Manager Breuckman noted that a variation had been granted to a resident to install a front yard fence on Ridge Road. At that time, it was discussed that an additional ordinance amendment should be considered to allow limited front yard fencing along Ridge Road only. Existing fences are wrought iron, wood, brick or stone. The proposed ordinance would allow fences or walls of those materials up to 48 inches and set back 12 inches from the sidewalk.

Motion by Commissioner Perry, second by Commissioner Foreman, to schedule a public hearing on Tuesday, August 8, 2017 at 7:30 p.m., to solicit public comments on the proposed ordinance amendments as presented.

Adopted: Yeas: Commissioners Perry, Foreman, Krzysiak, Scott, Mayor Metzger
 Nays: None

City Manager's Report

City Manager Breuckman reported that the SOCWA water rate study has been issued. Pleasant Ridge water cost is below the average of other SOCWA users. Assistant City Manager Pietrzak discussed that the single stream recycling bins will be coming at the end of August. There is one on display at the pool. A notice will be going to residents regarding changing the garbage collection day. The pick-up day has been Friday for approximately 70 years. The city is looking at changing it to Mondays when the City Hall is open. Also, it will be easier to solve any pick-up problems on the next day which will be Tuesday. If there is a Monday holiday, it will be picked up on Tuesday. It will be better for weekend clean up as well. The Woodward streetscape changes are scheduled to proceed next week. Information from the energy survey will be presented at future Commission meetings. The City is looking to cooperate with SEMREO to purchase residential solar energy solutions. The Commission needs to revisit existing regulations regarding solar panels and installation. There is a contractor in place for the Community Center solar project which should be installed within a month or two. Commissioner Foreman noted that the roof of the Community Center has been leaking. A pump in one of the HVAC units had failed and has now been replaced.

Commissioner Krzysiak expressed some concern regarding the recent dog census and Oakland County Animal Control. The City partners with the County for animal control services. The service is free and saves the City the cost of maintaining their own animal control department and shelter.

This is the third dog census that the County has conducted in Pleasant Ridge. Their animal control department is funded by dog tags and license. They perform the census for safety to make sure dogs are licensed and vaccinated. They do not census every community every year; only if that community's reported number of dogs falls below the expected average based on the number of households. Commissioner Foreman noted that some citizens complained about the intrusiveness of the census takers. City Clerk Drealan noted that citizens can call the census office and report their tag number.

Other Business

Commissioner Krzysiak noted that the book for July is *Annie's Ghost*, by local author Steve Luxenberg, regarding a family with a mentally ill sister who was institutionalized. The meeting is on July 12 at 7:00 p.m. in Hessel Park. Next month's meeting is on August 9 at Stephenson Park. The book is *Fool's Crow*, by James Welch.

City Clerk Amy Drealan noted that qualifying petitions for Mayor and City Commission are available. They are due by July 25 at 4:00 p.m. One petition is in for Mayor and one for Commissioner.

With no further business or discussion, Mayor Metzger adjourned the meeting at 8:47 pm.

Mayor Kurt Metzger

Amy M. Drealan, City Clerk

/dleg

July 2017

ACCOUNTS PAYABLE

PAYROLL LIABILITIES	\$	6,617.40
TAX LIABILITIES	\$	576,604.23
ACCOUNTS PAYABLE	\$	282,005.06
TOTAL	\$	865,226.69

PAYROLL

July 5, 2017	\$	52,268.67
July 19, 2017	\$	47,476.66
TOTAL	\$	99,745.33

CHECK REGISTER FOR CITY OF PLEASANT RIDGE
 PAYROLL LIABILITIES
 JULY 2017

Check Date	Check	Vendor Name	Description	Amount
7/5/2017	1933	ALERUS FINANCIAL	RETIRMENT CONTRIBUTIONS	\$ 1,320.70
7/5/2017	1934	MIFOP	UNON DUES	\$ 141.00
7/5/2017	1935	MISDU	FOC DEDUCTIONS	\$ 224.60
7/5/2017	1936	M&T BANK-ICMA - 401a	RETIRMENT CONTRIBUTIONS	\$ 1,433.04
7/5/2017	1937	ICMA RETIREMENT TRUST - 457	RETIRMENT CONTRIBUTIONS	\$ 248.82
7/19/2017	1946	ALERUS FINANCIAL	RETIRMENT CONTRIBUTIONS	\$ 1,343.15
7/19/2017	1947	MISDU	FOC DEDUCTIONS	\$ 224.60
7/19/2017	1948	ALERUS FINANCIAL	HCSP CONTRIBUTIONS	\$ 242.51
7/19/2017	1949	M&T BANK-ICMA - 401a	RETIRMENT CONTRIBUTIONS	\$ 1,190.16
7/19/2017	1950	ICMA RETIREMENT TRUST - 457	RETIRMENT CONTRIBUTIONS	\$ 248.82
TOTAL PAYROLL LIABILITIES				\$ 6,617.40

CITY OF PLEASANT RIDGE CHECK REGISTER
 ACCOUNTS PAYABLE
 JULY 11, 2017

Check Date	Check	Vendor Name	Description	Amount
7/11/2017	21326	BCBSM	HEALTH CARE BENEFITS AUGUST 2017	\$ 23,721.04
7/11/2017	21327	BUMPIN BUBBLES	BUBBLE SOCCER FOR PARK DAY 2017	\$ 494.12
7/11/2017	21328	CITY OF FERNDALE	FIRE CONTRACT PAYMENT	\$ 21,381.72
7/11/2017	21329	DAKTRONICS	AQUATICS CONTRTOL EQUIPMENT	\$ 4,100.00
7/11/2017	21330	DAVID SALAMAS	REIMBURSEMENT FOR SUPPLIES	\$ 600.00
7/11/2017	21331	GREAT AMERICA	TELEPHONE SERVICES	\$ 433.00
7/11/2017	21332	JANI-KING OF MICHIGAN, INC	JANITORIAL CLEANING SERVICES	\$ 2,161.00
7/11/2017	21333	MICHELLE DELACOURT	DESIGN OF THE SUMMER RIDGER	\$ 360.00
7/11/2017	21334	MOM2MOMLIST.COM	MOM 2 MOM SALE	\$ 23.00
7/11/2017	21335	O.P. AQUATICS	POOL CHEMICALS AND SUPPLIES	\$ 960.77
7/11/2017	21336	UNIFIRST CORPORATION	JANITORIAL SUPPLIES	\$ 263.49
7/11/2017	21337	WETMORE TIRE AND AUTO	POLICE CAR MAINTEANCE AND REPAIRS	\$ 631.64
7/11/2017	21338	ACCUSHRED, LLC	CITY SHREDDING SERVICES	\$ 55.00
7/11/2017	21339	ARMONDO CAVAZOS	REIBURSEMENT FOR SPRINKLER REPAIRS	\$ 248.50
7/11/2017	21340	BADGER METER, INC.	MOBILE HOSTING FEE	\$ 69.78
7/11/2017	21341	CITY OF BERKLEY	JUNE DISPATCH SERVICES	\$ 3,349.61
7/11/2017	21342	CRAIG MARRERO	REIMBURSEMENT FOR SPRINKLER REPAIRS	\$ 205.00
7/11/2017	21343	DEBORAH GREEN	PREPERATION OF MEETING MINUTES	\$ 87.50
7/11/2017	21344	DETROIT EDISON COMPANY	COMMUNITY STREET LIGHTING	\$ 2,912.21
7/11/2017	21345	EUGENE LUMBERG	CITY ATTORNEY SERVICES	\$ 437.50
7/11/2017	21346	FERNDALE PIZZA CO., INC.	RECREATION SPECIAL PROJECTS	\$ 36.00
7/11/2017	21347	G2 CONSULTING GROUP	HANOVER PAVEMENT PROJECT	\$ 2,438.50
7/11/2017	21348	GREAT LAKES WATER AUTHORITY	IWC CHARGES FOR MAY 2017	\$ 429.48
7/11/2017	21349	HUNTINGTON WOODS RECREATION	MIKE DEVLIN TRAINING	\$ 38.75
7/11/2017	21350	KAREN SHEPLER	IMGINATION STATION	\$ 225.00
7/11/2017	21351	KENNETH BORYCZ	MECHANICAL INSPECTOR SERVICES	\$ 900.00
7/11/2017	21352	MARK ANTHONY	RETURN OF PERFORMANCE BOND	\$ 43,300.00
7/11/2017	21353	MICHIGAN MUNICIPAL LEAGUE	UNEMPLOYMENT QUARTERLY PAYMENT	\$ 22.42
7/11/2017	21354	O.P. AQUATICS	POOL CHEMICALS AND POOL SUPPLIES	\$ 1,231.85
7/11/2017	21355	OAKLAND COUNTY ANIMAL CONTROL	DOG LICENSES	\$ 673.25
7/11/2017	21356	OAKLAND COUNTY TREASURER	GWKDD SEWERAGE TREATMENT	\$ 46,527.17
7/11/2017	21357	ROCKET ENTERPRISE, INC	FLAG SERVICE AND REPAIRS	\$ 137.00
7/11/2017	21358	SCHEER'S ACE HARDWARE	BUILDING & PARKS MAINTENANCE	\$ 186.32
7/11/2017	21359	SOCRRA	REFUSE COLLECTION CONTRACT	\$ 8,706.00
7/11/2017	21360	SOCWA	WATER PURCHASES	\$ 24,241.67
7/11/2017	21361	THE DAVEY TREE EXPERT COMPANY	TREE REMOVAL- 20 HANOVER	\$ 1,200.00
7/11/2017	21362	VICTORIA DICKINSON	SIT AND GET FIT CLASS JUNE 2017	\$ 1,175.50
7/11/2017	21363	WEX BANK	FUEL PURCHASES FOR POLICE CARS	\$ 1,274.97
7/11/2017	21364	WOLVERINE POWER SYSTEMS	BUILDING MAINTENANCE	\$ 279.85

Total for 7-11-2017

\$ 195,518.61

CITY OF PLEASANT RIDGE CHECK REGISTER
ACCOUNTS PAYABLE
JULY 25, 2017

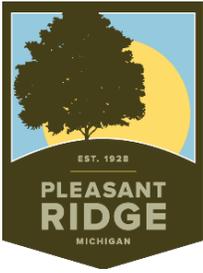
Check Date	Check	Vendor Name	Description	Amount
7/25/2017	21365	NSSL	A FINAL ENTRIES - PR SWIM TEAM	\$ 560.00
7/25/2017	21366	SPECIAL OLYMPICS	CONTRIBUTION - PR SWIM TEAM	\$ 775.00
7/25/2017	21367	WOODBROOKE HILLS	B FINAL ENTRIES-PR SWIM TEAM	\$ 820.00
7/25/2017	21368	ANDERSON, ECKSTEIN & WESTRICK	SEWER LINING	\$ 23,422.90
7/25/2017	21369	BRILAR	DPW CONTRACTED SERVICES	\$ 32,967.31
7/25/2017	21370	CITY OF ROYAL OAK	DPW CONTRACTED SERVICES	\$ 4,129.29
7/25/2017	21371	COMMUNITY MEDIA NETWORK	CITY COMMISSION MTG RECORDING	\$ 200.00
7/25/2017	21372	FERNDALE PIZZA CO., INC.	SPECIAL PROGRAM SUPPLIES	\$ 114.48
7/25/2017	21373	HOLIDAY FOOD CENTER	H&G TOUR AND MEETING SUPPLIES	\$ 733.27
7/25/2017	21374	MATTHEW BENDER & CO., INC	POLICE DEPARTMENT OPERATING	\$ 46.44
7/25/2017	21375	RENE KINWEN	RECREATION CLASSES	\$ 192.00
7/25/2017	21376	SAFEBUILT	CODE ENFORCEMENT SERVICES	\$ 495.00
7/25/2017	21377	45TH DISTRICT COURT	REIMBURSEMENT OF TICKET 17PR01064	\$ 165.00
7/25/2017	21378	AXON ENTERPRISE, INC	POLICE DEPARTMENT SUPPLIES	\$ 977.07
7/25/2017	21379	EILEEN WUNDERLICH	SPRINKLER REPAIRS	\$ 118.50
7/25/2017	21380	ICMA RETIREMENT CORPORATION	ANNUAL PLAN FEE	\$ 250.00
7/25/2017	21381	KENNETH APPLEWHITE	DJ FOR SWIM TEAM PARTY	\$ 125.00
7/25/2017	21382	LEGAL SHIELD	PRE PAID LEGAL SERVICES	\$ 25.90
7/25/2017	21383	MICH DEPT OF TRANSPORTATION	TRAFFIC SIGNAL ENERGY	\$ 52.79
7/25/2017	21384	NYE UNIFORM	POLICE DEPARTMENT SUPPLIES	\$ 46.50
7/25/2017	21385	O.P. AQUATICS	POOL CHEMICALS AND SUPPLIES	\$ 416.50
7/25/2017	21386	OAKLAND COUNTY TREASURER	CLEMIS MEMBERSHIP DUES	\$ 2,325.50
7/25/2017	21387	PLANTE & MORAN PLLC	ACCOUNTING SERVICES	\$ 5,403.00
7/25/2017	21388	SOCRRA	REFUSE COLLECTION CONTRACT	\$ 7,754.00
7/25/2017	21389	STOP STICK, LTD	POLICE DEPARTMENT SUPPLIES	\$ 1,388.00
7/25/2017	21390	UNIFIRST CORPORATION	MAT RENTAL AND JANITORIAL SUPPLIES	\$ 533.05
7/25/2017	21391	UNUM LIFE INSURANCE COMPANY	HEALTH CARE BENEFITS - AUGUST 2017	\$ 156.00
7/25/2017	21392	VARSITY SHOP	SWIM TEAM SUPPLIES	\$ 2,269.00
7/25/2017	21393	WEB MATTERS BY KRISTIE	WEBSITE HOSTING JULY 2017	\$ 24.95

Total for 7-25-2017

\$ 86,486.45

CITY OF PLEASANT RIDGE CHECK REGISTER
TAX LIABILITIES
JULY 2017

Check Date	Check	Vendor Name	Description	Amount
7/26/2017	2463	CITY OF PLEASANT RIDGE-GENERAL	2017 TAX COLLECTIONS TO 7-15-2017	\$ 271,103.34
7/26/2017	2464	FERNDALE PUBLIC SCHOOL	2017 TAX COLLECTIONS TO 7-15-2017	\$ 119,578.92
7/26/2017	2465	JAMES MEDFORD AND GINI LENNING	2017 SUMMER TAX OVERPAYMENT	\$ 2,179.75
7/26/2017	2466	OAKLAND COUNTY TREASURER	2017 TAX COLLECTIONS TO 7-15-2017	\$ 183,408.11
7/26/2017	2467	SEAN CAMPBELL & MEGAN MARTIN-CAMPBELL	2017 SUMMER TAX OVERPAYMENT	\$ 334.11
TOTAL PAYROLL LIABILITIES				\$ 576,604.23



City of Pleasant Ridge

23925 Woodward Avenue
Pleasant Ridge, Michigan 48069

RESOLUTION National Recovery Month September 2017

WHEREAS, substance use recovery is important for individual well-being and vitality, as well as for families, communities and businesses; and

WHEREAS, approximately 21.5 million people aged 12 or older had a substance use disorder in the past year; and

WHEREAS, 1 in 5 teens abuse prescription drugs before the age of 13; and

WHEREAS, last year 2,000 Michiganders died due to an opioid overdose, placing Michigan as the 7th highest number of deaths due to opioid overdose in the nation; and

WHEREAS, we will continue to educate and raise awareness of the risks and potential harm associated with prescription drug misuse; and

WHEREAS, we believe everyone facing substance use disorders deserve the benefit of recovery; and

WHEREAS, Friday, September 22, 2017, has been designated for Oakland County's 10th Annual Substance Use Recovery Celebration and Walk; and

WHEREAS, stigma and stereotypes associated with substance use disorders often keep people from seeking treatment that could improve their quality of life; and

WHEREAS, substance use disorders occur when the recurrent use of alcohol and/or drugs causes clinically or functionality significant impairment, such as health problems, disability, and failure to meet major responsibilities at work, school, or home; and

WHEREAS, substance use disorder recovery is a journey and transformation, enabling people to live in a community of his/her choice while striving to achieve his/her full potential; and

WHEREAS, substance use disorder recovery benefits individuals with substance use disorders by focusing on their abilities to live, work, learn, and fully participate and contribute to our society, and also enriches the culture of our community; and

NOW THEREFORE BE IT RESOLVED by the Pleasant Ridge City Commission hereby recognize September 2017 as National Recovery Month and calls upon citizens, public and private institutions, business, and schools to recommit to increasing awareness and understanding of substance use, and the need for appropriate and accessible services to promote recovery.

IN WITNESS WHEREOF, I, Amy M. Drealan, duly certified Clerk of the City of Pleasant Ridge, do hereby attest that the Foregoing is a true and accurate copy of a Resolution adopted By the Pleasant Ridge City Commission at its Regular Meeting held Tuesday, August 8, 2017.

Amy M. Drealan, City Clerk



LAW OFFICES

ADKISON, NEED, ALLEN, & RENTROP

PROFESSIONAL LIMITED LIABILITY COMPANY

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OF COUNSEL:
KEVIN M. CHUDLER
SARAH J. GABIS
LINDA S. MAYER

May 25, 2017

VIA ELECTRONIC MAIL

Mr. James Breuckman, City Manager
City of Pleasant Ridge
23925 Woodward Avenue
Pleasant Ridge, Michigan 48069

**Re: City Code Ordinance Amendment
DAS/Small Cell/Wireless Facilities in Public Rights-of-Way**

Dear Jim:

As requested, enclosed is a proposed ordinance to the City Code, dealing with DAS/Small Cell/Wireless Facilities in the public rights-of-way.

As we discussed, there is currently nothing in the City Code that deals with requests such as just received from Mobilitie to construct a new tower within the right-of-way. Section 62-21 speaks to utility poles, but many of these wireless providers are not considered "utilities" and this section is thus not applicable.

The Metro Act currently allows certain wireless providers to certain rights within the public right-of-way; however, the Metro Act is specifically inapplicable to construction of new towers or poles.

Note that the ordinance reserves complete discretion to the City Commission as to whether or not to grant a permit in any particular case. Nothing under current law requires us to do so. However, I suggest this ordinance so that the permit requirement is absolutely clear to the wireless providers.

Additionally, the law in this area is constantly evolving. Mobilitie has filed a petition with the Federal Communications Commission that, if approved, might grant them additional rights within the public right-of-way. However, this proposed Code amendment is proper under current law.

Mr. James Breuckman, City Manager
May 22, 2017
Page 2 of 2

Please call if you need anything else.

Very truly yours,

ADKISON, NEED, ALLEN, & RENTROP, PLLC



Gregory K. Need.

/mms
Enc.

City of Pleasant Ridge
Ordinance No.

AN ORDINANCE TO AMEND THE CITY OF PLEASANT RIDGE CODE OF ORDINANCES,
CHAPTER 62 – STREETS, SIDEWALKS AND OTHER PUBLIC PLACES.

THE CITY OF PLEASANT RIDGE ORDAINS:

Section 1.

A new Chapter 62, Article II, Sec. 62-29 is added to read as follows:

Sec. 62-29. - DAS/Small Cell/Wireless facilities in the public rights-of-way.

- (a) Definitions. For purposes of this section, the following terms and phrases shall be defined as follows:

Collocation means the location of DAS/Small Cell/Wireless Facilities on an existing structure, tower, or building, with the view toward reducing the overall number of structures required to support wireless communication facilities within the City.

DAS/Small Cell/Wireless Network shall mean any distributed antennae system or small cell telecommunication or data wireless network.

DAS/Small Cell/Wireless Facilities or DAS/Small Cell/Wireless Network Facilities means structures of any nature installed and/or operated for the provision of DAS/Small Cell/Wireless Network services, including without limitation, antennas, supporting structures for antennas, poles, equipment shelters or houses, and any ancillary equipment.

Wireless communication facilities means and includes all structures and accessory facilities relating to the use of the radio frequency spectrum for the purpose of transmitting or receiving radio signals.

- (b) License Agreement. No person shall install or operate, in whole or in part, DAS/Small Cell/Wireless Facilities or DAS/Small Cell/Wireless Network Facilities in a City public right-of-way or other public place without first applying for and receiving a DAS/Small Cell/Wireless license from the City Commission in a form and subject to such terms and conditions as is acceptable to the City Commission. Nothing herein shall be interpreted to require the City Commission to issue such a license and the City Commission reserves to itself discretion to grant, deny or modify a request for such a license as it determines to be in the best interest of the City and its citizens.
- (c) METRO Act Permit. No person shall install or operate “telecommunications facilities,” as defined in the Metropolitan Extension Telecommunications Rights-Of-Way Oversight Act, Act No. 48 of the Public Acts of 2002, as amended (the

“Act”) without first obtaining a permit under the Act from the City, including any part of a DAS/Small Cell/Wireless system constituting telecommunication facilities.

- (d) Collocation Requirement. Prior to submitting an application for a permit under this section, the applicant shall investigate collocation on existing facilities as an option. The applicant shall explain in its permit application why collocation is commercially or otherwise impracticable. Providing for collocation of future wireless communication facilities shall be a condition of approval of any permit granted for a new supporting structure in the public right-of-way; provided, however, that the co-location requirement may be waived if the pole or support structure is disguised or stealthed so as to blend with the immediate environment (e.g., streetlights, power poles, etc.).
- (e) Design Parameters. Where permitted by the City, the following minimal design parameters shall apply to DAS/Small Cells/Wireless Network Facilities in City public rights-of-way:
 - (1) The required map(s) for proposed DAS/Small Cell/Wireless Facilities shall be legible, to scale, labeled with streets, and contain sufficient detail to clearly identify the proposed DAS/Small Cell/Wireless Network Facilities’ locations and surroundings. Where applicable, the required map or list shall include and identify any requested pole height(s).
 - (2) The maximum height of a pole or other supporting structure installed to accommodate a DAS/Small Cell/Wireless Network shall be 35 feet.
 - (3) Unless otherwise permitted in Section (e) (6), DAS/Small Cell/Wireless Facilities shall be located no closer than 18 inches from an existing sidewalk/face of curb or 18 inches from a proposed future sidewalk/face of curb location.
 - (4) Unless otherwise permitted in Section (e) (6), DAS/Small Cell/Wireless Facilities shall be located no closer than 10 feet from any driveway.
 - (5) In residential areas, DAS/Small Cell/Wireless Facilities shall be located in line with a side lot line whenever possible and not in front of a house.
 - (6) The licensee shall field-stake all proposed locations for DAS/Small Cell/Wireless Facilities which shall be subject to the approval of the City, Oakland County Road Commission and/or the Michigan Department of Transportation as applicable. All approved DAS/Small Cell/Wireless Facilities’ locations shall be on a per pole/equipment/other basis. Such approvals shall be memorialized by the City and licensee.
 - (7) Once precise locations have been approved in accordance with Section (e) (6), the licensee shall provide latitude and longitude coordinates for the DAS/Small Cell/Wireless Facilities’ locations to the City Manager.

- (8) The licensee shall be responsible to obtain such other permits and approvals as required by law.
- (9) Architectural design:
 - a. Unless otherwise required by another applicable code or regulation, poles and/or antennas shall be painted a neutral color so as to reduce visual obtrusiveness.
 - b. At all pole sites related equipment shall use materials, colors, textures, screening, and landscaping that will blend the facilities to the natural setting and environment.
 - c. All poles shall be of monopole design and construction unless the City approves an alternate design. Disguising or stealthing poles is encouraged.
- (f) Modifications. The City Commission may modify the design parameters of subsection (e), in its sole discretion based on its review of factors affecting the public health, safety and welfare.
- (g) Compliance with Applicable Law. The City, in reviewing and authorizing a permit under the Act and/or a license referred to in this section, and the licensee, in the establishment and operation of any DAS/Small Cell/Wireless Network Facilities, shall comply with all applicable federal and state laws.
- (h) Fees. Fees for the agreement and permits required shall be as provided for in the Act or those documents and as periodically authorized by resolution of the City Commission.

Section 2. Severability.

Should any provision or part of this Article be declared by any court of competent jurisdiction to be invalid or unenforceable, the same shall not affect the validity or enforceability of the balance of this Article, which shall remain in full force and effect.

Section 3. Repealer.

All other ordinances or parts of ordinances in conflict with this ordinance are hereby repealed only to the extent necessary to give this Ordinance full force and effect.

Section 4. Savings clause.

Nothing in this Article shall be construed to affect any suit or proceeding pending in any court or any rights acquired or any liability incurred, or any cause or causes of action acquired or existing, under any act or ordinance hereby repealed as cited in Section 3 of this Ordinance; nor shall any just or legal right or remedy of any character be lost, impaired, or affected by this Ordinance.

Section 4. Effective Date.

This Ordinance shall become effective fifteen days after enactment and upon publication as provided by law.

Section 5. Adoption.

This Ordinance is hereby declared to have been adopted by the City Commission of the City of Pleasant Ridge at a meeting duly called and held on the ____ day of _____, 2017, and ordered to be given publication in the manner prescribed by law.

James Breuckman, City Manager

Amy M. Drealan, City Clerk



[Home](#) / [Engineering & Technology](#) / [Electromagnetic Compatibility Division](#) / [Radio Frequency Safety](#) /

RF Safety FAQ

Frequently asked questions about the safety of radiofrequency (RF) and microwave emissions from transmitters and facilities regulated by the FCC

For further information contact the FCC's RF Safety Program at rfsafety@fcc.gov or 1-888-225-5322

Index (click on topic below)

- [What is "radiofrequency" and microwave radiation?](#)
- [What is non-ionizing radiation?](#)
- [How is radiofrequency energy used?](#)
- [How is radiofrequency radiation measured?](#)
- [What biological effects can be caused by RF energy?](#)
- [Can people be exposed to levels of radiofrequency radiation and microwaves that could be harmful?](#)
- [Can radiofrequency radiation cause cancer?](#)
- [What research is being done on RF biological effects?](#)
- [What levels are safe for exposure to RF energy?](#)
- [Why has the FCC adopted guidelines for RF exposure?](#)
- [How safe are mobile phones? Can they cause cancer?](#)
- [How can I obtain the specific absorption rate \(SAR\) value for my mobile phone?](#)
- [Do "hands-free" ear pieces for mobile phones reduce exposure to RF emissions? What about mobile phone accessories that claim to shield the head from RF radiation?](#)
- [Can mobile phones be used safely in hospitals and near medical telemetry equipment?](#)
- [Are wireless and PCS towers and antennas safe?](#)
- [Are cellular and other radio towers located near homes or schools safe for residents and students?](#)
- [Are emissions from radio and television antennas safe?](#)
- [How safe are radio antennas used for paging and "two-way" communications? What about "push-to-talk" radios such as "walkie-talkies?"](#)
- [How safe are microwave and satellite antennas?](#)
- [Are RF emissions from amateur radio stations harmful?](#)
- [What is the FCC's policy on radiofrequency warning signs? For example, when should signs be posted, where should they be located and what should they say?](#)
- [Can implanted electronic cardiac pacemakers be affected by nearby RF devices such as microwave ovens or cellular telephones?](#)
- [Does the FCC regulate exposure to radiation from microwave ovens, television sets and computer monitors?](#)
- [Does the FCC routinely monitor radiofrequency radiation from antennas?](#)
- [Does the FCC maintain a database that includes information on the location and technical parameters of all the towers and antennas it regulates?](#)
- [Which other federal agencies have responsibilities related to potential RF health effects?](#)
- [Can local and state governmental bodies establish limits for RF exposure?](#)
- [Where can I obtain more information on potential health effects of radiofrequency energy?](#)

WHAT ARE "RADIOFREQUENCY" AND MICROWAVE RADIATION?

Electromagnetic radiation consists of waves of electric and magnetic energy moving together (*i.e.*, radiating) through space at the speed of light. Taken together, all forms of electromagnetic energy are referred to as the electromagnetic "spectrum." Radio waves and microwaves emitted by transmitting antennas are one form of electromagnetic energy. They are collectively referred to as "radiofrequency" or "RF" energy or radiation. Note that the term "radiation" does not mean "radioactive." Often, the terms "electromagnetic field" or "radiofrequency field" are used to indicate the presence of electromagnetic or RF energy.

The RF waves emanating from an antenna are generated by the movement of electrical charges in the antenna. Electromagnetic waves can be characterized by a wavelength and a frequency. The wavelength is the distance covered by one complete cycle of the electromagnetic wave, while the frequency is the number of electromagnetic waves passing a given point in one second. The frequency of an RF signal is usually expressed in terms of a unit called the "hertz" (abbreviated "Hz"). One Hz equals one cycle per second. One megahertz MHz equals one million cycles per second.

Different forms of electromagnetic energy are categorized by their wavelengths and frequencies. The RF part of the electromagnetic spectrum is generally defined as that part of the spectrum where electromagnetic waves have frequencies in the range of about 3 kilohertz (3 kHz) to 300 gigahertz (300 GHz). Microwaves are a specific category of radio waves that can be loosely defined as radiofrequency energy at frequencies ranging from about 1 GHz to 30 GHz. ([Back to Index](#))

WHAT IS NON-IONIZING RADIATION?

"Ionization" is a process by which electrons are stripped from atoms and molecules. This process can produce molecular changes that can lead to damage in biological tissue, including effects on DNA, the genetic material of living organisms. This process requires interaction with high levels of electromagnetic energy. Those types of electromagnetic radiation with enough energy to ionize biological material include X-radiation and gamma radiation. Therefore, X-rays and gamma rays are examples of ionizing radiation.

The energy levels associated with RF and microwave radiation, on the other hand, are not great enough to cause the ionization of atoms and molecules, and RF energy is, therefore, a type of non-ionizing radiation. Other types of non-ionizing radiation include visible and infrared light. Often the term "radiation" is used, colloquially, to imply that ionizing radiation (radioactivity), such as that associated with nuclear power plants, is present. Ionizing radiation should not be confused with the lower-energy, non-ionizing radiation with respect to possible biological effects, since the mechanisms of action are quite different. ([Back to Index](#))

HOW IS RADIOFREQUENCY ENERGY USED?

The most important use for RF energy is in providing telecommunications services. Radio and television broadcasting, cellular telephones, personal communications services (PCS), pagers, cordless telephones, business radio, radio communications for police and fire departments, amateur radio, microwave point-to-point links and satellite communications are just a few of the many telecommunications applications of RF energy. Microwave ovens are an example of a non-telecommunication use of RF energy. Radiofrequency radiation, especially at microwave frequencies, can transfer energy to water molecules. High levels of microwave energy will generate heat in water-rich materials such as most foods. This efficient absorption of microwave energy via water molecules results in rapid heating throughout an object, thus allowing food to be cooked more quickly in a microwave oven than in a conventional oven. Other important non-telecommunication uses of RF energy include radar and industrial heating and sealing. Radar is a valuable tool used in many applications range from traffic speed enforcement to air traffic control and military surveillance. Industrial heaters and sealers generate intense levels of RF radiation that rapidly heats the material being processed in the same way that a microwave oven cooks food. These devices have many uses in industry, including molding plastic materials, gluing wood products, sealing items such as shoes and pocketbooks, and processing food products. There are also a number of medical applications of RF energy, such as diathermy and magnetic resonance imaging (MRI). ([Back to Index](#))

HOW IS RADIOFREQUENCY RADIATION MEASURED?

An RF electromagnetic wave has both an electric and a magnetic component (electric field and magnetic field), and it is often convenient to express the intensity of the RF environment at a given location in terms of units specific to each component. For example, the unit "volts per meter" (V/m) is used to express the strength of the electric field (electric "field strength"), and the unit "amperes per meter" (A/m) is used to express the strength of the magnetic field (magnetic "field strength"). Another commonly used unit for characterizing the total electromagnetic field is "power density." Power density is most appropriately used when the point of measurement is far enough away from an antenna to be located in the "far-field" zone of the antenna.

Power density is defined as power flow per unit area. For example, power density is commonly expressed in terms of watts per square meter (W/m^2), milliwatts per square centimeter (mW/cm^2), or microwatts per square centimeter ($\mu W/cm^2$). One mW/cm^2 equals $10 W/m^2$, and $100 \mu W/cm^2$ equal one W/m^2 . With respect to frequencies in the microwave range, power density is usually used to express intensity of exposure.

The quantity used to measure the rate at which RF energy is actually absorbed in a body is called the "Specific Absorption Rate" or "SAR." It is usually expressed in units of watts per kilogram (W/kg) or milliwatts per gram (mW/g). In the case of exposure of the whole body, a standing ungrounded human adult absorbs RF energy at a maximum rate when the frequency of the RF radiation is in the range of about 70 MHz. This means that the "whole-body" SAR is at a maximum under these conditions. Because of this "resonance" phenomenon and consideration of children and grounded adults, RF safety standards are generally most restrictive in the frequency range of about 30 to 300 MHz. For exposure of parts of the body, such as the exposure from hand-held mobile phones, "partial-body" SAR limits are used in the safety standards to control absorption of RF energy (see later questions on mobile phones). ([Back to Index](#))

WHAT BIOLOGICAL EFFECTS CAN BE CAUSED BY RF ENERGY?

Biological effects can result from exposure to RF energy. Biological effects that result from heating of tissue by RF energy are often referred to as "thermal" effects. It has been known for many years that exposure to very high levels of RF radiation can be harmful due to the ability of RF energy to heat biological tissue rapidly. This is the principle by which microwave ovens cook food. Exposure to very high RF intensities can result in heating of biological tissue and an increase in body temperature. Tissue damage in humans could occur during exposure to high RF levels because of the body's inability to cope with or dissipate the excessive heat that could be generated. Two areas of the body, the eyes and the testes, are particularly vulnerable to RF heating because of the relative lack of available blood flow to dissipate the excess heat load.

At relatively low levels of exposure to RF radiation, *i.e.*, levels lower than those that would produce significant heating, the evidence for production of harmful biological effects is ambiguous and unproven. Such effects, if they exist, have been referred to as "non-thermal" effects. A number of reports have appeared in the scientific literature describing the observation of a range of biological effects resulting from exposure to low levels of RF energy. However, in most cases, further experimental research has been unable to reproduce these effects. Furthermore, since much of the research is not done on whole bodies (*in vivo*), there has been no determination that such effects constitute a human health hazard. It is generally agreed that further research is needed to determine the generality of such effects and their possible relevance, if any, to human health. In the meantime, standards-setting organizations and government agencies continue to monitor the latest experimental findings to confirm their validity and determine whether changes in safety limits are needed to protect human health. ([Back to Index](#))

CAN PEOPLE BE EXPOSED TO LEVELS OF RADIOFREQUENCY RADIATION THAT COULD BE HARMFUL?

Studies have shown that environmental levels of RF energy routinely encountered by the general public are typically far below levels necessary to produce significant heating and increased body temperature. However, there may be situations, particularly in workplace environments near high-powered RF sources, where the recommended limits for safe exposure of human beings to RF energy could be exceeded. In such cases, restrictive measures or mitigation actions may be necessary to ensure the safe use of RF energy. ([Back to Index](#))

CAN RADIOFREQUENCY RADIATION CAUSE CANCER?

Some studies have also examined the possibility of a link between RF exposure and cancer. Results to date have been inconclusive. While some experimental data have suggested a possible link between exposure and tumor formation in animals exposed under certain specific conditions, the results have not been independently replicated. Many other studies have failed to find evidence for a link to cancer or any related condition. The Food and Drug Administration has further information on this topic with respect to RF exposure from mobile phones at the following Web site: [FDA Radiation-Emitting Products Page \(http://www.fda.gov/Radiation-EmittingProducts/RadiationEmittingProductsandProcedures/HomeBusinessandEntertainment/CellPhones/ucm116335.htm\)](http://www.fda.gov/Radiation-EmittingProducts/RadiationEmittingProductsandProcedures/HomeBusinessandEntertainment/CellPhones/ucm116335.htm). ([Back to Index](#))

WHAT RESEARCH IS BEING DONE ON RF BIOLOGICAL EFFECTS?

For many years, research into the possible biological effects of RF energy has been carried out in laboratories around the world, and such research is continuing. Past research has resulted in a large number of peer-reviewed scientific publications on this topic. For many years the U.S. Government has sponsored research into the biological effects of RF energy. The majority of this work was initiated by the Department of Defense, due in part, to the extensive military interest in using RF equipment such as radar and other relatively high-powered radio transmitters for routine military operations. In addition, some U.S. civilian federal agencies responsible for health and safety, such as the Environmental Protection Agency (EPA) and the U.S. Food and Drug Administration (FDA), have sponsored and conducted research in this area. At the present time, other U.S. civilian federal health and safety agencies and institutions, such as the National Toxicology Program and the National Institutes of Health, have also initiated RF bioeffects research.

In 1996, the World Health Organization (WHO) established a program called the International EMF Project, which is designed to review the scientific literature concerning biological effects of electromagnetic fields, identify gaps in knowledge about such effects, recommend research needs, and work towards international resolution of health concerns over the use of RF technology. The WHO maintains a Web site that provides extensive information on this project and about RF biological effects and research (www.who.int/peh-emf/en/ (<http://www.who.int/peh-emf/en/>)).

The FDA, the EPA and other federal agencies responsible for public health and safety have worked together and in connection with the WHO to monitor developments and identify research needs related to RF biological effects. More information about this can be obtained at the FDA Web site: [FDA Radiation-Emitting Products - Current Research \(http://www.fda.gov/Radiation-EmittingProducts-CurrentResearch\)](http://www.fda.gov/Radiation-EmittingProducts-CurrentResearch) (<http://www.fda.gov/Radiation-EmittingProducts/RadiationEmittingProductsandProcedures/HomeBusinessandEntertainment/CellPhones/ucm116335.htm>). ([Back to Index](#))

WHAT LEVELS ARE SAFE FOR EXPOSURE TO RF ENERGY?

Exposure standards for radiofrequency energy have been developed by various organizations and governments. Most modern standards recommend safe levels of exposure separately for the general public and for workers. In the United States, the FCC has adopted and used recognized safety guidelines for evaluating RF environmental exposure since 1985. Federal health and safety agencies, such as the EPA, FDA, the National Institute for Occupational Safety and Health (NIOSH) and the Occupational Safety and Health Administration (OSHA) have also been involved in monitoring and investigating issues related to RF exposure.

The FCC guidelines for human exposure to RF electromagnetic fields were derived from the recommendations of two expert organizations, the National Council on Radiation Protection and Measurements (NCRP) and the Institute of Electrical and Electronics Engineers (IEEE). Both the NCRP exposure criteria and the IEEE standard were developed by expert scientists and engineers after extensive reviews of the scientific literature related to RF biological effects. The exposure guidelines are based on thresholds for known adverse effects, and they incorporate prudent margins of safety. In adopting the current RF exposure guidelines, the FCC consulted with the EPA, FDA, OSHA and NIOSH, and obtained their support for the guidelines that the FCC is using.

Many countries in Europe and elsewhere use exposure guidelines developed by the International Commission on Non-Ionizing Radiation Protection (ICNIRP). The ICNIRP safety limits are generally similar to those of the NCRP and IEEE, with a few exceptions. For example, ICNIRP recommends somewhat different exposure levels in the lower and upper frequency ranges and for localized exposure due to such devices as hand-held cellular telephones. One of the goals of the WHO EMF Project (see above) is to provide a framework for international harmonization of RF safety standards. The NCRP, IEEE and ICNIRP exposure guidelines identify the same threshold level at which harmful biological effects may occur, and the values for Maximum Permissible Exposure (MPE) recommended for electric and magnetic field strength and power density in both documents are based on this level. The threshold level is a Specific Absorption Rate (SAR) value for the whole body of 4 watts per kilogram (4 W/kg).

In addition, the NCRP, IEEE and ICNIRP guidelines for maximum permissible exposure are different for different transmitting frequencies. This is due to the finding (discussed above) that whole-body human absorption of RF energy varies with the frequency of the RF signal. The most restrictive limits on whole-body exposure are in the frequency range of 30-300 MHz where the human body absorbs RF energy most efficiently when the whole body is exposed. For devices that expose only part of the body, such as mobile phones, different exposure limits are specified (see below), but these limits are based on the same underlying threshold level.

The exposure limits used by the FCC are expressed in terms of SAR, electric and magnetic field strength and power density for transmitters operating at frequencies from 100 kHz to 100 GHz. The applicable limits depend upon the type of sources (e.g, whether a cellphone or a broadcast transmitting antenna). The actual values can be found in our informational bulletin available in [OET Bulletin 65 \(http://www.fcc.gov/encyclopedia/oet-bulletins-line#65\)](http://www.fcc.gov/encyclopedia/oet-bulletins-line#65). ([Back to Index](#))

WHY HAS THE FCC ADOPTED GUIDELINES FOR RF EXPOSURE?

The FCC authorizes and licenses devices, transmitters and facilities that generate RF radiation. It has jurisdiction over all transmitting services in the U.S. except those specifically operated by the Federal Government. However, the FCC's primary jurisdiction does not lie in the health and safety area, and it must rely on other agencies and organizations for guidance in these matters.

Under the National Environmental Policy Act of 1969 (NEPA), all Federal agencies are required to implement procedures to make environmental consideration a necessary part of an agency's decision-making process. Therefore, FCC approval and licensing of transmitters and facilities must be evaluated for significant impact on the environment. Human exposure to RF radiation emitted by FCC-regulated transmitters is one of several factors that must be considered in such environmental evaluations. In 1996, the FCC revised its guidelines for RF exposure as a result of a multi-year proceeding and as required by the Telecommunications Act of 1996.

Facilities under the jurisdiction of the FCC having a high potential for creating significant RF exposure to humans, such as radio and television broadcast stations, satellite-earth stations, experimental radio stations and certain cellular, PCS and paging facilities are required to undergo routine evaluation for compliance with RF exposure guidelines whenever an application is submitted to the FCC for construction or modification of a transmitting facility or renewal of a license. Failure to show compliance with the FCC's RF exposure guidelines in the application process could lead to the preparation of a formal Environmental Assessment, possible Environmental Impact Statement and eventual rejection of an application. Technical guidelines for evaluating compliance with the FCC RF safety requirements can be found in the FCC's [OET Bulletin 65 \(http://www.fcc.gov/encyclopedia/oet-bulletins-line#65\)](http://www.fcc.gov/encyclopedia/oet-bulletins-line#65) (see "OET Safety Bulletins" listing elsewhere at this Web site).

Low-powered, intermittent, or inaccessible RF antennas and facilities (including many cell sites) are normally "categorically excluded" from the requirement of routine evaluation for RF exposure. These exclusions are based on calculations and measurement data indicating that such transmitting stations or devices are unlikely to cause exposures in excess of the guidelines under normal conditions of use. The FCC's policies on RF exposure and categorical exclusion can be found in Section 1.1307(b) of the FCC's Rules and Regulations [47 CFR 1.1307(b)]. It should be emphasized, however, that these exclusions are not exclusions from compliance, but, rather, only exclusions from routine evaluation. Transmitters or facilities that are otherwise categorically excluded from evaluation may be required, on a case-by-case basis, to demonstrate compliance when evidence of potential non-compliance of the transmitter or facility is brought to the Commission's attention [see 47 CFR 1.1307(c) and (d)]. [\(Back to Index\)](#)

HOW SAFE ARE MOBILE AND PORTABLE PHONES?

In recent years, publicity, speculation, and concern over claims of possible health effects due to RF emissions from hand-held wireless telephones prompted various research programs to investigate whether there is any risk to users of these devices. There is no scientific evidence to date that proves that wireless phone usage can lead to cancer or a variety of other health effects, including headaches, dizziness or memory loss. However, studies are ongoing and key government agencies, such as the Food and Drug Administration (FDA) continue to monitor the results of the latest scientific research on these topics. Also, as noted above, the World Health Organization has established an ongoing program to monitor research in this area and make recommendations related to the safety of mobile phones.

The FDA, which has primary jurisdiction for investigating mobile phone safety, has stated that it cannot rule out the possibility of risk, but if such a risk exists, "it is probably small." Further, it has stated that, while there is no proof that cellular telephones can be harmful, concerned individuals can take various precautionary actions, including limiting conversations on hand-held cellular telephones and making greater use of telephones with hands-free kits where there is a greater separation distance between the user and the radiating antenna. The Web site for the FDA's Center for Devices and Radiological Health provides further information on mobile phone safety: [FDA Radiation-Emitting Products - Cell Phones \(http://www.fda.gov/Radiation-EmittingProducts/RadiationEmittingProductsandProcedures/HomeBusinessandEntertainment/CellPhones/default.htm\)](http://www.fda.gov/Radiation-EmittingProducts/RadiationEmittingProductsandProcedures/HomeBusinessandEntertainment/CellPhones/default.htm).

The [Government Accountability Office \(http://www.gao.gov\)](http://www.gao.gov) (GAO) prepared [a report \(http://www.gao.gov/products/GAO-12-771\)](http://www.gao.gov/products/GAO-12-771) of its investigation into safety concerns related to mobile phones. The report concluded that further research is needed to confirm whether mobile phones are completely safe for the user, and the report recommended that the FDA take the lead in monitoring the latest research results.

The FCC's exposure guidelines specify limits for human exposure to RF emissions from hand-held mobile phones in terms of Specific Absorption Rate (SAR), a measure of the rate of absorption of RF energy by the body. The safe limit for a mobile phone user is an SAR of 1.6 watts per kg (1.6 W/kg), averaged over one gram of tissue, and compliance with this limit must be demonstrated before FCC approval is granted for marketing of a phone in the United States. Somewhat less restrictive limits, e.g., 2 W/kg averaged over 10 grams of tissue, are specified by the ICNIRP guidelines used in Europe and most other countries.

Measurements and analysis of SAR in models of the human head have shown that the 1.6 W/kg limit is unlikely to be exceeded under normal conditions of use of cellular and PCS hand-held phones. The same can be said for cordless telephones used in the home. Testing of hand-held phones is normally done under conditions of maximum power usage, thus providing an additional margin of safety, since most phone usage is not at maximum power. Information on SAR levels for many phones is available electronically through the FCC's Web site and database (see next question). [\(Back to Index\)](#)

HOW CAN I OBTAIN THE SPECIFIC ABSORPTION RATE (SAR) VALUE FOR MY MOBILE PHONE?

As explained above, the Specific Absorption Rate, or SAR, is the unit used to determine compliance of cellular and PCS phones with safety limits adopted by the FCC. The SAR is a value that corresponds to the rate at which RF energy absorbed in the head of a user of a wireless handset. The FCC requires mobile phone manufacturers to demonstrate compliance with an SAR level of 1.6 watts per kilogram (averaged over one gram of tissue).

Information on SAR for a specific cell phone model can be obtained for almost all cellular telephones by using the FCC identification (ID) number for that model. The FCC ID number is usually printed somewhere on the case of the phone or device. In many cases, you will have to remove the battery pack to find the number. Once you have the number proceed as follows. Go to the following website: [Equipment Authorization \(http://www.fcc.gov/engineering-technology/laboratory-division/general/equipment-authorization\)](http://www.fcc.gov/engineering-technology/laboratory-division/general/equipment-authorization). Click on the link for "[FCC ID Search \(https://www.fcc.gov/fccid\)](https://www.fcc.gov/fccid)". Once you are there you will see instructions for inserting the FCC ID number. Enter the FCC ID number (in two parts as indicated: "Grantee Code" is comprised of the first three characters, the "Equipment Product Code" is the remainder of the FCC ID). Then click on "Start Search." Grant(s) of Equipment Authorization for this particular FCC ID number should then be available. Click on a check under "Display Grant" and the grant should appear. Look through the Grant for the section on SAR compliance, certification of compliance with FCC rules for RF exposure, or similar language. This section should contain the value(s) for typical or maximum SAR for your phone.

For portable phones and devices authorized since June 2, 2000, maximum SAR levels should be noted on the grant of equipment authorization. For phones and devices authorized between about mid-1998 and June 2000, detailed information on SAR levels is typically found in one of the "exhibits" associated with the grant. Therefore, once the grant is accessed in the FCC database, the exhibits can be viewed by clicking on the appropriate entry labeled "View Exhibit." Electronic records for FCC equipment authorization grants were initiated in 1998, so devices manufactured prior to this date may not be included in our electronic database.

Although the FCC database does not list phones by model number, there are certain non-government Web sites such as www.cnet.com (<http://www.cnet.com/>), that provide information on SAR from specific models of mobile phones. However, the FCC has not reviewed these sites for accuracy and makes no guarantees with respect to them. In addition to these sites, some mobile phone manufacturers make this information available at their own Web sites. Also, phones certified by the Cellular Telecommunications and Internet Association (CTIA) are now required to provide this information to consumers in the instructional materials that come with the phones.

If you want additional consumer information on safety of cell phones and other transmitting devices please consult the information available below. In particular, you may wish to read or download our further consumer information: [Cell Phones: Wireless Devices and Health Concerns \(/consumers/guides/wireless-devices-and-health-concerns\)](#), [Specific Absorption Rate \(SAR\) For Cell Phones: \(/consumers/guides/specific-absorption-rate-sar-cell-phones-what-it-means-you\)](#) What It Means For You, or [General Wireless Device FAQ's \(/general/telephone-guides\)](#). If you have any problems or additional questions you may contact us at: rf-safety@fcc.gov (<mailto:rf-safety@fcc.gov>) or you may call: 1-888-225-5322 (1-888-CALL-FCC). You may also wish to consult a consumer update on mobile phone safety published by the U.S. Food and Drug Administration (FDA) that can be found at: [FDA Radiation-Emitting Products Page \(http://www.fda.gov/Radiation-EmittingProducts/RadiationEmittingProductsandProcedures/HomeBusinessandEntertainment/CellPhones/default.htm\)](http://www.fda.gov/Radiation-EmittingProducts/RadiationEmittingProductsandProcedures/HomeBusinessandEntertainment/CellPhones/default.htm). ([Back to Index](#))

DO "HANDS-FREE" EAR PIECES FOR MOBILE PHONES REDUCE EXPOSURE TO RF EMISSIONS? WHAT ABOUT MOBILE PHONE ACCESSORIES THAT CLAIM TO SHIELD THE HEAD FROM RF RADIATION?

"Hands-free" kits with ear pieces can be used with cell phones for convenience and comfort. In addition, because the phone, which is the source of the RF emissions, will not be placed against the head, absorption of RF energy in the head will be reduced. Therefore, it is true that use of an ear piece connected to a mobile phone will significantly reduce the rate of energy absorption (or "SAR") in the user's head. On the other hand, if the phone is mounted against the waist or other part of the body during use, then that part of the body will absorb RF energy. Even so, mobile phones marketed in the U.S. are required to meet safety limit requirements regardless of whether they are used against the head or against the body. So either configuration should result in compliance with the safety limit. Note that hands-free devices using Bluetooth technology also include a wireless transmitter; however, the Bluetooth transmitter operates at a much lower power than the cell phone.

A number of devices have been marketed that claim to "shield" or otherwise reduce RF absorption in the body of the user. Some of these devices incorporate shielded phone cases, while others involve nothing more than a metallic accessory attached to the phone. Studies have shown that these devices generally do not work as advertised. In fact, they may actually increase RF absorption in the head due to their potential to interfere with proper operation of the phone, thus forcing it to increase power to compensate. The Federal Trade Commission has published a Consumer Alert regarding these shields on its website at: FTC Consumer Information - [Cell Phone Radiation Scam. \(http://www.consumer.ftc.gov/articles/0109-cell-phone-radiation-scams\)](http://www.consumer.ftc.gov/articles/0109-cell-phone-radiation-scams) ([Back to Index](#))

CAN MOBILE PHONES BE USED SAFELY IN HOSPITALS AND NEAR MEDICAL TELEMETRY EQUIPMENT?

The FCC does not normally investigate problems of electromagnetic interference from RF transmitters to medical devices. Some hospitals have policies, which limit the use of cell phones, due to concerns that sensitive medical equipment could be affected. The FDA's Center for Devices and Radiological Health (CDRH) has primary jurisdiction for medical device regulation. FDA staff has monitored this potential problem and more information is available from the CDRH Web site: <http://www.fda.gov/Radiation-EmittingProducts> (<http://www.fda.gov/Radiation-EmittingProducts/>). ([Back to Index](#))

ARE WIRELESS CELLULAR AND PCS TOWERS AND ANTENNAS SAFE?

Cellular wireless radio services transmit using frequencies between 824 and 894 megahertz (MHz). Transmitters in the Personal Communications Service (PCS) use frequencies in the range of 1850-1990 MHz. More recently, advanced wireless services have been or are being introduced that transmit at frequencies in the 600, 700, 800, 1695-1780, 1915-1920, 1995-2020, 2110-2200 MHz spectrum ranges. Antennas used for cellular and PCS transmissions are typically located on towers, water tanks or other elevated structures including rooftops and the sides of buildings. The combination of antennas and associated electronic equipment is referred to as a cellular or PCS "base station" or "cell site." Typical heights for free-standing base station towers or structures are 50-200 feet. A cellular base station may utilize several "omni-directional" antennas that look like poles, 10 to 15 feet in length, although these types of antennas are less common in urbanized areas.

In urban and suburban areas, cellular and PCS service providers commonly use "sector" antennas for their base stations. These antennas are rectangular panels, e.g., about 1 by 4 feet in size, typically mounted on a rooftop or other structure, but they are also mounted on towers or poles. Panel antennas are usually arranged in three groups of three each. It is common that not all antennas are used for the transmission of RF energy; some antennas may be receive-only.

At a given cell site, the total RF power that could be radiated by the antennas depends on the number of radio channels (transmitters) installed, the power of each transmitter, and the type of antenna. While it is theoretically possible for cell sites to radiate at very high power levels, the maximum power radiated in any direction usually does not exceed 500 watts.

The RF emissions from cellular or PCS base station antennas are generally directed toward the horizon in a relatively narrow pattern in the vertical plane. In the case of sector (panel) antennas, the pattern is fan-shaped, like a wedge cut from a pie. As with all forms of electromagnetic energy, the power density from the antenna decreases rapidly as one moves away from the antenna. Consequently, ground-level exposures are much less than exposures if one were at the same height and directly in front of the antenna.

Measurements made near typical cellular and PCS installations, especially those with tower-mounted antennas, have shown that ground-level power densities are hundreds to thousands of times less than the FCC's limits for safe exposure. This makes it extremely unlikely that a member of the general public could be exposed to RF levels in excess of FCC guidelines due solely to cellular or PCS base station antennas located on towers or monopoles.

When cellular and PCS antennas are mounted at rooftop locations it is possible that a person could encounter RF levels greater than those typically encountered on the ground. However, once again, exposures approaching or exceeding the safety guidelines are only likely to be encountered very close to and directly in front of the antennas. For sector-type antennas, RF levels to rear are usually very low. ([Back to Index](#))

For further information on cellular services go to <https://www.fcc.gov/general/cellular-service> (<https://www.fcc.gov/general/cellular-service/>).

ARE CELLULAR AND OTHER RADIO TOWERS LOCATED NEAR HOMES OR SCHOOLS SAFE FOR RESIDENTS AND STUDENTS?

As discussed above, radiofrequency emissions from antennas used for cellular and PCS transmissions result in exposure levels on the ground that are typically thousands of times below safety limits. These safety limits were adopted by the FCC based on the recommendations of expert organizations and endorsed by agencies of the Federal Government responsible for health and safety. Therefore, there is no reason to believe that such towers could constitute a potential health hazard to nearby residents or students.

Other antennas, such as those used for radio and television broadcast transmissions, use power levels that are generally much higher than those used for cellular and PCS antennas. Therefore, in some cases there could be a potential for higher levels of exposure to persons on the ground. However, all broadcast stations are required to demonstrate compliance with FCC safety guidelines, and ambient exposures to nearby persons from such stations are typically well below FCC safety limits. ([Back to Index](#))

ARE EMISSIONS FROM RADIO AND TELEVISION BROADCAST ANTENNAS SAFE?

Radio and television broadcast stations transmit their signals via RF electromagnetic waves. There are thousands of radio and TV stations on the air in the United States. Broadcast stations transmit at various RF frequencies, depending on the channel, ranging from about 540 kHz for AM radio up to about 700 MHz for UHF television stations. Frequencies for FM radio and VHF television lie in between these two extremes. Broadcast transmitter power levels range from less than a watt to more than 100,000 watts. Some of these transmission systems can be a significant source of RF energy in the local environment, so the FCC requires that broadcast stations submit evidence of compliance with FCC RF guidelines.

The amount of RF energy to which the public or workers might be exposed as a result of broadcast antennas depends on several factors, including the type of station, design characteristics of the antenna being used, power transmitted to the antenna, height of the antenna and distance from the antenna. Note that the power normally quoted for FM and TV broadcast transmitters is the "effective radiated power" or ERP not the actual transmitter power mentioned above. ERP is the transmitter power delivered to the antenna multiplied by the directivity or gain of the antenna. Since high gain antennas direct most of the RF energy toward the horizon and not toward the ground, high ERP transmission systems such as used for UHF-TV broadcast tend to have less ground level field intensity near the station than FM radio broadcast systems with lower ERP and gain values. Also, since energy at some frequencies is absorbed by the human body more readily than at other frequencies, both the frequency of the transmitted signal and its intensity is important. Calculations can be performed to predict what field intensity levels would exist at various distances from an antenna.

Public access to broadcasting antennas is normally restricted so that individuals cannot be exposed to high-level fields that might exist near antennas.

Measurements made by the FCC, EPA and others have shown that ambient RF radiation levels in inhabited areas near broadcasting facilities are typically well below the exposure levels recommended by current standards and guidelines. There have been a few situations around the country where RF levels in publicly accessible areas have been found to be higher than those recommended in applicable safety standards. As they have been identified, the FCC has required that stations at those facilities promptly bring their combined operations into compliance with our guidelines. Thus, despite the relatively high operating powers of many broadcast stations, such cases are unusual, and members of the general public are unlikely to be exposed to RF levels from broadcast towers that exceed FCC limits

Antenna maintenance workers are occasionally required to climb antenna structures for such purposes as painting, repairs, or lamp replacement. Both the EPA and OSHA have reported that in such cases it is possible for a worker to be exposed to high levels of RF energy if work is performed on an active tower or in areas immediately surrounding a radiating antenna. Therefore, precautions should be taken to ensure that maintenance personnel are not exposed to unsafe RF fields.

([Back to Index](#))

HOW SAFE ARE RADIO ANTENNAS USED FOR PAGING AND "TWO-WAY" COMMUNICATIONS? WHAT ABOUT "PUSH-TO-TALK" RADIOS SUCH AS "WALKIE-TALKIES?"

Land-mobile communications include a variety of communications systems, which require the use of portable and mobile RF transmitting sources. These systems operate in several frequency bands between about 30 and 1000 MHz. Radio systems used by the police and fire departments, radio paging services and business radio are a few examples of these communications systems. They have the advantage of providing communications links between various fixed and mobile locations.

There are essentially three types of RF transmitters associated with land-mobile systems: base-station transmitters, vehicle-mounted transmitters, and hand-held transmitters. The antennas and power levels used for these various transmitters are adapted for their specific purpose. For example, a base-station antenna must radiate its signal to a relatively large area, and therefore, its transmitter generally has to use higher power levels than a vehicle-mounted or hand-held radio transmitter. Although base-station antennas usually operate with higher power levels than other types of land-mobile antennas, they are normally inaccessible to the public since they must be mounted at significant heights above ground to provide for adequate signal coverage. Also, many of these antennas transmit only intermittently. For these reasons, base-station antennas are generally not of concern with regard to possible hazardous exposure of the public to RF radiation. Studies at rooftop locations have indicated that high-powered paging antennas may increase the potential for exposure to workers or others with access to such sites, e.g., maintenance personnel. This could be a concern especially when multiple transmitters are present. In such cases, restriction of access or other mitigation actions may be necessary.

Transmitting power levels for vehicle-mounted land-mobile antennas are generally less than those used by base-station antennas but higher than those used for hand-held units. Some manufacturers recommend that users and other nearby individuals maintain some minimum distance (e.g., 1 to 2 feet) from a vehicle-mounted antenna during transmission or mount the antenna in such a way as to provide maximum shielding for vehicle occupants. Studies have shown that this is probably a conservative precaution, particularly when the percentage of time an antenna is actually radiating is considered. Unlike cellular telephones, which transmit continuously during a call, two-way radios normally transmit only when the "push-to-talk" button is depressed. This significantly reduces exposure, and there is no evidence that there would be a safety hazard associated with exposure from vehicle-mounted, two-way antennas when the manufacturer's recommendations are followed.

Hand-held "two-way" portable radios such as walkie-talkies are low-powered devices used to transmit and receive messages over relatively short distances. Because of the low power levels used, the intermittency of these transmissions ("push-to-talk"), and due to the fact that these radios are held away from the head, they

should not expose users to RF energy in excess of safe limits. Although FCC rules do not require routine documentation of compliance with safety limits for push-to-talk two-way radios as it does for cellular and PCS phones (which transmit continuously during use and which are held against the head), most of these radios are tested and the resulting SAR data are available from the FCC's [Equipment Authorization \(http://www.fcc.gov/oet/ea/\)](http://www.fcc.gov/oet/ea/) database. Click on the link for [FCC ID Search \(https://www.fcc.gov/fccid\)](https://www.fcc.gov/fccid). ([Back to Index](#))

HOW SAFE ARE MICROWAVE AND SATELLITE ANTENNAS?

Point-to-point microwave antennas transmit and receive microwave signals across relatively short distances (from a few tenths of a mile to 30 miles or more). These antennas are usually circular dish or rectangular in shape and are normally mounted on a supporting tower, rooftop, sides of buildings or on similar structures that provide clear and unobstructed line-of-sight paths between both ends of a transmission path. These antennas have a variety of uses, such as relaying long-distance telephone calls, and serving as links between broadcast studios and transmitting sites.

The RF signals from these antennas travel in a directed beam from a transmitting antenna to the receiving antenna, and dispersion of microwave energy outside of this narrow beam is minimal or insignificant. In addition, these antennas transmit using very low power levels, usually on the order of a few watts or less. Measurements have shown that ground-level power densities due to microwave directional antennas are normally thousands of times or more below recommended safety limits. Moreover, microwave tower sites are normally inaccessible to the general public. Significant exposures from these antennas could only occur in the unlikely event that an individual were to stand directly in front of and very close to an antenna for a period of time.

Ground-based antennas used for satellite-earth communications typically are parabolic dish antennas, some as large as 10 to 30 meters in diameter, that are used to transmit uplink or receive downlink microwave signals to or from satellites in orbit around the earth. These signals allow delivery of a variety of communications services, including television network programming, electronic news gathering and point-of-sale credit card transactions. Some satellite-earth station antennas are used only to receive RF signals (*i.e.*, like the satellite television antenna used at a residence), and because they do not transmit, RF exposure is not an issue for those antennas.

Since satellite-earth station antennas are directed toward satellites above the earth, transmitted beams point skyward at various angles of inclination, depending on the particular satellite being used. Because of the longer distances involved, power levels used to transmit these signals are relatively large when compared, for example, to those used by the terrestrial microwave point-to-point antennas discussed above. However, as with microwave antennas, the beams used for transmitting earth-to-satellite signals are concentrated and highly directional, similar to the beam from a flashlight. In addition, public access would normally be restricted at uplink sites where exposure levels could approach or exceed safe limits.

Although many satellite-earth stations are fixed sites, portable uplink antennas are also used, *e.g.*, for electronic news gathering. These antennas can be deployed in various locations. Therefore, precautions may be necessary, such as temporarily restricting access in the vicinity of the antenna, to avoid exposure to the main transmitted beam. In general, however, it is unlikely that a transmitting earth station antenna would routinely expose members of the public to potentially harmful levels of RF energy. ([Back to Index](#))

ARE RF EMISSIONS FROM AMATEUR RADIO STATIONS HARMFUL?

There are hundreds of thousands of amateur radio operators ("hams") worldwide. Amateur radio operators in the United States are licensed by the FCC. The Amateur Radio Service provides its members with the opportunity to communicate with persons all over the world and to provide valuable public service functions, such as making communications services available during disasters and emergencies. Like all FCC licensees, amateur radio operators are required to comply with the FCC's guidelines for safe human exposure to RF fields. Under the FCC's rules, amateur operators can transmit with power levels of up to 1500 watts. However, most operators use considerably less power than this maximum. Studies by the FCC and others have shown that most amateur radio transmitters would not normally expose persons to RF levels in excess of safety limits. This is primarily due to the relatively low operating powers used by most amateurs, the intermittent transmission characteristics typically used and the relative inaccessibility of most amateur antennas. As long as appropriate distances are maintained from amateur antennas, exposure of nearby persons should be well below safety limits.

To help ensure compliance of amateur radio facilities with RF exposure guidelines, both the FCC and American Radio Relay League (ARRL) have issued publications to assist operators in evaluating compliance for their stations. The FCC's publication (Supplement B to [OET Bulletin 65 \(http://www.fcc.gov/encyclopedia/oet-bulletins-line#65\)](http://www.fcc.gov/encyclopedia/oet-bulletins-line#65)) can be viewed and downloaded elsewhere at this Web site (see "OET RF Safety Bulletins"). ([Back to Index](#))

WHAT IS THE FCC'S POLICY ON RADIOFREQUENCY WARNING SIGNS? FOR EXAMPLE, WHEN SHOULD SIGNS BE POSTED, WHERE SHOULD THEY BE LOCATED AND WHAT SHOULD THEY SAY?

Radiofrequency warning or alerting signs should be used to provide information on the presence of RF radiation or to control exposure to RF radiation within a given area. Standard radiofrequency hazard warning signs are commercially available from several vendors. Appropriate signs should incorporate the format recommended by the Institute for Electrical and Electronics Engineers (IEEE) and as specified in the IEEE standard: IEEE Std C95.2-1999 (Web address: <http://www.ieee.org> (<http://www.ieee.org>)). Guidance concerning the placement of signs can be found in the IEEE Standard: IEEE Std C95.7-2005 (available for free through the IEEE Get Program). When signs are used, meaningful information should be placed on the sign advising affected persons of: (1) the nature of the potential hazard (*i.e.*, high RF fields), (2) how to avoid the potential hazard, and (3) whom to contact for additional information. In some cases, it may be appropriate to also provide instructions to direct individuals as to how to work safely in the RF environment of concern. Signs should be located prominently in areas that will be readily seen by those persons who may have access to an area where high RF fields are present. ([Back to Index](#))

CAN IMPLANTED ELECTRONIC CARDIAC PACEMAKERS BE AFFECTED BY NEARBY RF DEVICES SUCH AS MICROWAVE OVENS OR CELLULAR TELEPHONES?

Over the past several years there has been concern that signals from some RF devices could interfere with the operation of implanted electronic pacemakers and other medical devices. Because pacemakers are electronic devices, they could be susceptible to electromagnetic signals that could cause them to malfunction. Some anecdotal claims of such effects in the past involved emissions from microwave ovens. However, it has never been shown that the RF energy from a properly operating microwave oven is strong enough to cause such interference.

Some studies have shown that mobile phones can interfere with implanted cardiac pacemakers if a phone is used in close proximity (within about 8 inches) of a pacemaker. It appears that such interference is limited to older pacemakers, which may no longer be in use. Nonetheless, to avoid this potential problem, pacemaker patients can avoid placing a phone in a pocket close to the location of their pacemaker or otherwise place the phone near the pacemaker location during phone use. Patients with pacemakers should consult with their physician or the FDA if they believe that they may have a problem related to RF interference. Further information on this is available from the FDA: <http://www.fda.gov/Radiation-EmittingProducts/> (<http://www.fda.gov/Radiation-EmittingProducts/>). ([Back to Index](#))

DOES THE FCC REGULATE EXPOSURE TO THE ELECTROMAGNETIC RADIATION FROM MICROWAVE OVENS, TELEVISION SETS AND COMPUTER MONITORS?

The Commission does not regulate exposure to emissions from these devices. Protecting the public from harmful radiation emissions from these consumer products is the responsibility of the U.S. Food and Drug Administration (FDA). Inquiries should be directed to the FDA's Center for Devices and Radiological Health (CDRH), and, specifically, to the CDRH Office of Compliance at (301) 594-4654. ([Back to Index](#))

DOES THE FCC ROUTINELY MONITOR RADIOFREQUENCY RADIATION FROM ANTENNAS?

The FCC does not have the resources or the personnel to routinely monitor the exposure levels due at all of the thousands of transmitters that are subject to FCC jurisdiction. However, while there are large variations in exposure levels in the environment of fixed transmitting antennas, it is exceedingly rare for exposure levels to approach FCC public exposure limits in accessible locations. In addition, the FCC does not routinely perform RF exposure investigations unless there is a reasonable expectation that the FCC exposure limits may be exceeded. ([Back to Index](#))

DOES THE FCC MAINTAIN A DATABASE THAT INCLUDES INFORMATION ON THE LOCATION AND TECHNICAL PARAMETERS OF ALL OF THE TRANSMITTER SITES IT REGULATES?

The FCC does not have a comprehensive, transmitter-specific database for all of the services it regulates. However, the FCC does have information for some services such as radio and television broadcast stations, and many larger antenna towers are required to register with the Antenna Structure Registration (ASR) database if they meet certain criteria. In those cases, location information is generally specified in terms of degrees, minutes, and seconds of latitude and longitude. In some services, licenses are allowed to utilize additional transmitters or to increase power without notifying the FCC. Other services are licensed by geographic area, such that the FCC has no knowledge concerning the actual number or location of transmitters within that geographic area.

The [FCC General Menu Reports \(GenMen\)](http://fjallfoss.fcc.gov/General_Menu_Reports/) (http://fjallfoss.fcc.gov/General_Menu_Reports/) search engine unites most of the FCC's licensing databases under a single umbrella. Databases included are the Wireless Telecommunications Bureau's ULS, the Media Bureau's CDBS, COALS (cable data) and BLS, and the International Bureau's IBFS. Entry points or search options in the various databases include frequency, state/county, latitude/longitude, call sign and licensee name.

The FCC also publishes, generally on a weekly basis, bulk extracts of its various licensing databases. Each licensing database has its own unique file structure. These extracts consist of multiple, very large files. [OET maintains an index](http://www.fcc.gov/oet/info/database/fadb.html) (<http://www.fcc.gov/oet/info/database/fadb.html>) to these databases.

OET has developed a [Spectrum Utilization Study Software](http://www.fcc.gov/oet/info/software/suss/) (<http://www.fcc.gov/oet/info/software/suss/>) tool-set that can be used to create a Microsoft Access version of the individual exported licensing databases and then create MapInfo mid and mif files so that radio assignments can be plotted. This experimental software is used to conduct internal spectrum utilization studies needed in the rule-making process. While the FCC makes this software available to the public, no technical support is provided. ([Back to Index](#))

WHICH OTHER FEDERAL AGENCIES HAVE RESPONSIBILITIES RELATED TO POTENTIAL RF HEALTH EFFECTS?

Certain agencies in the Federal Government have been involved in monitoring, researching or regulating issues related to human exposure to RF radiation. These agencies include the Food and Drug Administration (FDA), the Environmental Protection Agency (EPA), the Occupational Safety and Health Administration (OSHA), the National Institute for Occupational Safety and Health (NIOSH), the National Telecommunications and Information Administration (NTIA) and the Department of Defense (DOD).

By authority of the Radiation Control for Health and Safety Act of 1968, the Center for Devices and Radiological Health (CDRH) of the FDA develops performance standards for the emission of radiation from electronic products including X-ray equipment, other medical devices, television sets, microwave ovens, laser products and sunlamps. The CDRH established a product performance standard for microwave ovens in 1971 limiting the amount of RF leakage from ovens. However, the CDRH has not adopted performance standards for other RF-emitting products. The FDA is, however, the lead federal health agency in monitoring the latest research developments and advising other agencies with respect to the safety of RF-emitting products used by the public, such as cellular and PCS phones.

The FDA's microwave oven standard is an emission standard (as opposed to an exposure standard) that allows specific levels of microwave energy leakage (measured at five centimeters from the oven surface). The standard also requires ovens to have two independent interlock systems that prevent the oven from generating microwaves if the latch is released or if the door of the oven is opened. The FDA has stated that ovens that meet its standards and are used according to the manufacturer's recommendations are safe for consumer and industrial use. More information is available from: [FDA's website for Radiation-Emitting Products](http://www.fda.gov/Radiation-EmittingProducts/RadiationEmittingProductsandProcedures/HomeBusinessandEntertainment/default.htm) (<http://www.fda.gov/Radiation-EmittingProducts/RadiationEmittingProductsandProcedures/HomeBusinessandEntertainment/default.htm>).

The EPA has, in the past, considered developing federal guidelines for public exposure to RF radiation. However, EPA activities related to RF safety and health are presently limited to advisory functions. For example, the EPA chairs an a Radiofrequency Interagency Working Group, which coordinates RF health-related activities among the various federal agencies with health or regulatory responsibilities in this area.

OSHA is part of the U.S. Department of Labor, and is responsible for protecting workers from exposure to hazardous chemical and physical agents. In 1971, OSHA issued a protection guide for exposure of workers to RF radiation [29 CFR 1910.97]. However, this guide was later ruled to be only advisory and not mandatory. Moreover, it was based on an earlier RF exposure standard that has now been revised. At the present time, OSHA uses the IEEE and/or FCC exposure guidelines for enforcement purposes under OSHA's general duty clause (for more information see: www.osha.gov/SLTC/radiofrequencyradiation/) (<http://www.osha.gov/SLTC/radiofrequencyradiation/>).

NIOSH is part of the U.S. Department of Health and Human Services. It conducts research and investigations into issues related to occupational exposure to chemical and physical agents. NIOSH has, in the past, undertaken to develop RF exposure guidelines for workers, but final guidelines were never adopted by the agency. NIOSH conducts safety-related RF studies through its Engineering and Physical Agents Effects/Hazards Branch in Cincinnati, Ohio, its Division of Applied Research and Technology (DART).

The NTIA is part of the U.S. Department of Commerce and is responsible for authorizing Federal Government use of the RF electromagnetic spectrum. Like the FCC, the NTIA also has NEPA responsibilities and has considered adopting guidelines for evaluating RF exposure from U.S. Government transmitters such as radar and military facilities. ([Back to Index](#))

CAN LOCAL AND STATE GOVERNMENTAL BODIES ESTABLISH LIMITS FOR RF EXPOSURE?

In the United States, some local and state jurisdictions have also enacted rules and regulations pertaining to human exposure to RF energy. However, the Telecommunications Act of 1996 contained provisions relating to federal jurisdiction to regulate human exposure to RF emissions from certain transmitting devices. In particular, Section 704 of the Act states that, "No State or local government or instrumentality thereof may regulate the placement, construction, and modification of personal wireless service facilities on the basis of the environmental effects of radio frequency emissions to the extent that such facilities comply with the Commission's regulations concerning such emissions." Further information on FCC policy with respect to facilities siting is available from the FCC's Wireless Telecommunications Bureau (see <https://www.fcc.gov/general/tower-and-antenna-siting>) and from "[A Local Government Official's Guide to Transmitting Antenna RF Emission Safety](http://wireless.fcc.gov/siting/FCC_LSGAC_RF_Guide.pdf) (http://wireless.fcc.gov/siting/FCC_LSGAC_RF_Guide.pdf)." ([Back to Index](#))

WHERE CAN I OBTAIN MORE INFORMATION ON POTENTIAL HEALTH EFFECTS OF RADIOFREQUENCY ENERGY?

Although relatively few offices or agencies within the Federal Government routinely deal with the issue of human exposure to RF fields, it is possible to obtain information and assistance on certain topics from the following federal agencies, all of which also have Internet Web sites.

FDA: The Food and Drug Administration's [Cell phone website](http://www.fda.gov/Radiation-EmittingProducts/RadiationEmittingProductsandProcedures/HomeBusinessandEntertainment/CellPhones/default.htm) (<http://www.fda.gov/Radiation-EmittingProducts/RadiationEmittingProductsandProcedures/HomeBusinessandEntertainment/CellPhones/default.htm>) : <http://www.fda.gov/Radiation-EmittingProducts/RadiationEmittingProductsandProcedures/HomeBusinessandEntertainment/> (<http://www.fda.gov/Radiation-EmittingProducts/RadiationEmittingProductsandProcedures/HomeBusinessandEntertainment/>)

There are many pages listed at the FDA web site. Topics include:

- [Wireless medical devices.](http://www.fda.gov/MedicalDevices/DigitalHealth/WirelessMedicalDevices/default.htm) (<http://www.fda.gov/MedicalDevices/DigitalHealth/WirelessMedicalDevices/default.htm>)
- [General Electronic Product Radiation Control.](http://www.fda.gov/Radiation-EmittingProducts/default.htm) (<http://www.fda.gov/Radiation-EmittingProducts/default.htm>)
- [FDA regulations that apply to manufacturers of electronic products](http://www.fda.gov/Radiation-EmittingProducts/ElectronicProductRadiationControlProgram/LawsandRegulations/default.htm) (<http://www.fda.gov/Radiation-EmittingProducts/ElectronicProductRadiationControlProgram/LawsandRegulations/default.htm>)

EPA: The Environmental Protection Agency's overview of power-line emissions: <http://www.epa.gov/radtown/power-lines.html>. (<http://www.epa.gov/radtown/power-lines.html>)

- [Power lines](http://www3.epa.gov/radtown/subpage.html#?scene=The+Burbs&polaroid=Power+Lines&sheet=0) (<http://www3.epa.gov/radtown/subpage.html#?scene=The+Burbs&polaroid=Power+Lines&sheet=0>):
- [Cell phone safety](http://nepis.epa.gov/Exe/ZyNET.exe/P1006A9Y.TXT?ZyActionD=ZyDocument&Client=EPA&Index=2006+Thru+2010&Docs=&Query=&Time=&EndTime=&SearchMethod=1&TocRestrict=n&Toc=&TocEntry=&QField=&QFieldYear=&QFieldMonth=&QFieldDay=&IntQFieldOp=0&ExtQFieldOp=0&XmlQuery=&File=D%3A%5Czyfiles%5Cindex%20Data%5C06thru10%5Ctxt%5C0000014%5CP1006A9Y.txt&User=ANONYMOUS&Password=anonymous&SortMethod=h%7C-&MaximumDocuments=1&FuzzyDegree=0&ImageQuality=r75g8/r75g8/x150y150g16/i425&Display=p%7Cf&DefSeekPage=x&SearchBack=ZyActionL&Back=ZyActionS&BackDesc=Results%20page&MaximumPages=1&ZyEntry=1&SeekPage=x&ZyPURL) (<http://nepis.epa.gov/Exe/ZyNET.exe/P1006A9Y.TXT?ZyActionD=ZyDocument&Client=EPA&Index=2006+Thru+2010&Docs=&Query=&Time=&EndTime=&SearchMethod=1&TocRestrict=n&Toc=&TocEntry=&QField=&QFieldYear=&QFieldMonth=&QFieldDay=&IntQFieldOp=0&ExtQFieldOp=0&XmlQuery=&File=D%3A%5Czyfiles%5Cindex%20Data%5C06thru10%5Ctxt%5C0000014%5CP1006A9Y.txt&User=ANONYMOUS&Password=anonymous&SortMethod=h%7C-&MaximumDocuments=1&FuzzyDegree=0&ImageQuality=r75g8/r75g8/x150y150g16/i425&Display=p%7Cf&DefSeekPage=x&SearchBack=ZyActionL&Back=ZyActionS&BackDesc=Results%20page&MaximumPages=1&ZyEntry=1&SeekPage=x&ZyPURL>):

OSHA: The Occupational Safety and Health Administration's Health and Safety Topics [Non-ionizing Radiation](http://www.osha.gov/SLTC/radiation_nonionizing/index.html) (http://www.osha.gov/SLTC/radiation_nonionizing/index.html).

NIOSH: The National Institute for Occupational Safety and Health's research on protecting workers from proven and possible EMF (electric and magnetic fields) health risks focusing on RF (radiofrequencies), ELF (extremely low frequencies) and Static magnetic fields: <http://www.cdc.gov/niosh/topics/emf> (<http://www.cdc.gov/niosh/topics/emf>).

NCI: The National Cancer Institute's Fact sheets on potential risks from exposure to:

- Magnetic fields: <http://www.cancer.gov/about-cancer/causes-prevention/risk/radiation/magnetic-fields-fact-sheet> (<http://www.cancer.gov/about-cancer/causes-prevention/risk/radiation/magnetic-fields-fact-sheet>)
- Cell phones: <http://www.cancer.gov/about-cancer/causes-prevention/risk/radiation/cell-phones-fact-sheet> (<http://www.cancer.gov/about-cancer/causes-prevention/risk/radiation/cell-phones-fact-sheet>).

NIHES: The National Institute of Environmental Health Sciences' main page for electric and magnetic fields and potential health effects: <http://www.niehs.nih.gov/health/topics/agents/emf/index.cfm> (<http://www.niehs.nih.gov/health/topics/agents/emf/index.cfm>)

NTP: The National Toxicology Program's studies that:

- Test the biological effects of cellphones (GSM): <http://ntp.niehs.nih.gov/testing/status/agents/ts-08013.html> (<http://ntp.niehs.nih.gov/testing/status/agents/ts-08013.html>)

- Test the biological effects of cellphones (CDMA): <http://ntp.niehs.nih.gov/testing/status/agents/ts-08015.html>
(<http://ntp.niehs.nih.gov/testing/status/agents/ts-08015.html>)

FCC: Questions regarding potential RF hazards from FCC-regulated transmitters can be directed to the Federal Communications Commission, Consumer & Governmental Affairs Bureau, 445 12th Street, S.W., Washington, D.C. 20554; Phone: 1-888-225-5322 (1-888-CALL-FCC); E-mail: rfsafety@fcc.gov (<mailto:rfsafety@fcc.gov>).

General information on RF exposure is found on the FCC's Office of Engineering and Technology (OET) web page at: <https://www.fcc.gov/general/radio-frequency-safety-0> (<https://www.fcc.gov/general/radio-frequency-safety-0>).

Information on the reported SAR values of devices (including cellular telephones and devices using Wi-Fi transmitters) can be found in the FCC's Office of Engineering and Technology Equipment Authorization (EA) database at: <http://www.fcc.gov/oet/ea> (<https://www.fcc.gov/engineering-technology/laboratory-division/general/equipment-authorization>). On this page you may search for information specific to a particular device by locating the FCC ID printed on the device (usually on the back or underneath, or behind the battery cover of the devices) and typing it into the [FCC ID Search page](https://www.fcc.gov/fccid). (<https://www.fcc.gov/fccid>)

General information on cellular telephones can be found at: <https://www.fcc.gov/general/telephone-guides> (<https://www.fcc.gov/general/telephone-guides>).

Information specific to fixed antenna structures can be found on the <https://www.fcc.gov/general/tower-and-antenna-siting> (<https://www.fcc.gov/general/tower-and-antenna-siting>).

Bureau/Office:

[Engineering & Technology](https://www.fcc.gov/engineering-%26-technology) (<https://www.fcc.gov/engineering-%26-technology>)

Tags:

[Devices, Engineering & Technology](/tags/devices-engineering-technology) (/tags/devices-engineering-technology) - [Safety](/tags/safety) (/tags/safety)

Updated:

Wednesday, November 25, 2015



City of Pleasant Ridge

Amy M. Drealan, City Clerk

From: Amy M. Drealan, City Clerk
To: Jim Breuckman, City Manager
Date: August 8, 2017
Re: Defined Contribution Benefit Account with MERS

Overview

Currently, the City offers a Defined Contribution Plan (401(a)) to certain employees. The current plan is offered through the International City Managers Association Retirement Trust (ICMA-RT). At this time, staff would like to establish the same account with the Municipal Employees Retirement Systems (MERS), and move the accounts from ICMA to MERS.

Background

The MERS Defined Contribution plan provides employees with an invested retirement account that they manage, with contributions from both the employer and the employee. An employee's future retirement benefit is determined by his or her account balance, which is affected by how much is contributed, the performance of the investments, and how many years the funds are invested.

This MERS Defined Contribution plan is a qualified retirement plan under Section 401(a) of the Internal Revenue Code (also known as a governmental money purchase plan).

Features & Benefits:

- Employees understand the account balance concept
- No investment risk to the employer
- Constant contribution level is easy to budget for
- Portability
- No unfunded accrued liability
- Ability for employees to roll in funds from other qualified plans

Requested Action

City Commission approval of the resolution adopting the MERS plan.

Resolution Adopting the MERS Defined Contribution Plan



1134 Municipal Way Lansing, MI 48917 | 800.767.MERS (6377) | Fax 517.703.9711

www.mersofmich.com

This Resolution is entered into under the provisions of 1996 PA 220 and the Municipal Employees' Retirement System of Michigan ("MERS") Plan Document, as each may be amended.

WHEREAS, the participating entity desires to adopt the MERS Defined Contribution Plan for its designated employees;

WHEREAS, the participating entity has furnished MERS with required data regarding each eligible employee and retiree;

WHEREAS, as a condition of MERS membership, and pursuant to the MERS Retirement Board's power as plan administrator and trustee under Plan Document Section 71 and MCL 38.1536, as each may be amended, it is appropriate and necessary to enter into a binding agreement providing for the administration of the Defined Contribution Plan, the reporting of wages, and the payment of the required contributions of a participating entity and withholding of employee contributions; now, therefore,

IT IS HEREBY RESOLVED:

1. On behalf of the participating entity, the governing body of _____ adopts the MERS Defined Contribution Plan in accordance with Plan Section 4 for its eligible employees as described in the MERS Defined Contribution Adoption Agreement, subject to the MERS Plan Document and as authorized by 1996 PA 220, as both may be amended;
2. The governing body agrees to the terms of and authorizes (title) _____ to execute the initial MERS Defined Contribution Adoption Agreement, a copy of which is attached hereto and which is hereby incorporated by reference; and

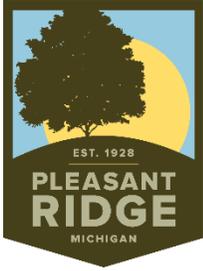
I hereby certify that the above is a true copy of the Defined Contribution Resolution adopted at the official meeting held by the governing body of this municipality:

Dated: _____, 20____. _____
(Signature of Authorized Official)

This Resolution shall have no legal effect under the MERS Plan Document until a certified copy of this adopting Resolution is filed with MERS, MERS determines that all necessary requirements under the Plan Document, the Adoption Agreement, and this Resolution have been met, and MERS certifies the Resolution below.

Received and Approved by the Municipal Employees' Retirement System of Michigan:

Dated: _____, 20____. _____
(Authorized MERS Signatory)



City of Pleasant Ridge

James Breuckman, City Manager

From: Jim Breuckman, City Manager
To: City Commission
Date: August 3, 2017
Re: City Code Amendment Public Hearing – Water and Sewer System Extensions

Overview

Attached is an ordinance to amend the City Code to allow the City to recoup costs for the extension of the water and sewer systems.

Background

The City does not currently have an ordinance that allows the City to recover costs involved in extending the water and sewer systems to serve a specific property or property. In most instances the private property owner extends the infrastructure at their own cost, but in some instances the City may do so and recover costs from the benefitted property owners.

The specific instance at hand is the extension of water and sewer service to the vacant lot at 1a Norwich. This extension was completed by the City as part of the Norwich street reconstruction project. The extension could be done at a lower cost while the street was already torn up, and it also prevents the eventual developer of 1a Norwich from having to dig up a new street to install new infrastructure to the lot.

Requested Action

City Commission consideration of the proposed ordinance.

City of Pleasant Ridge
Ordinance No. 423

AN ORDINANCE TO AMEND THE CITY OF PLEASANT RIDGE CODE OF ORDINANCES, CHAPTER 74 - UTILITIES.

THE CITY OF PLEASANT RIDGE ORDAINS:

Section 1.

1. A new Chapter 74, Utilities, Article II, Water, Division 5 – Water System Extensions is added to read as follows:

DIVISION 5- Water System Extensions

Sec. 74-121. – Extensions of water system.

- (a) Extensions of the water distribution system to provide water service to properties without such service may be initiated by the City or petition from property owners. The City Commission may grant or refuse to grant any request for extension of the system, may prescribe the terms and conditions upon which the request may be granted, and shall require the written acceptance of all terms and conditions by the property owner before proceeding with the extension.
- (b) Any extensions of the water system shall be done by the City, including any necessary engineering, construction, and inspections by the City's consulting engineer. Where an extension is done by petition of the property owner, the City shall be authorized to require security, prior to proceeding with the extension, in an amount sufficient to ensure completion of construction without any expense to the City.
- (c) The property owner shall bear all costs for any extensions pursuant to subsection (a) above, including, without limitation, construction, engineering, inspection, and any other professional costs, unless otherwise agreed by the City Commission.
- (d) Where the City elects to extend the water distribution system to vacant property, all costs incurred by the City in doing so shall be paid in full by the property owner within 90 days of issuance by the City of an invoice for such costs. At the request of the property owner, and with approval of the City Manager, these costs may be deferred and paid by the property owner, together with interest at a rate of 5% per annum, prior to issuance of a building permit for any construction on said property. In such event, the property owner shall execute a lien in favor of the City, in form as prepared by the City Attorney, to secure repayment of those costs, which lien may be added as a special assessment on the next City tax roll.

2. A new Chapter 74, Article III, Division 5 –Sewer System Extensions is added to read as follows:

DIVISION 5- Sewer System Extensions

Sec. 74-231. – Extensions of sewer system.

- a. Extensions of the City’s sewer system to provide sanitary or combined sewer service to properties without such service may be initiated by the City or petition from property owners. The City Commission may grant or refuse to grant any request for extension of the system, may prescribe the terms and conditions upon which the request may be granted, and shall require the written acceptance of all terms and conditions by the property owner before proceeding with the extension.
- b. Any extensions of the sewer system shall be done by the City, including any necessary engineering, construction, and inspections by the City’s consulting engineer. Where an extension is done by petition of the property owner, the City shall be authorized to require security, prior to proceeding with the extension, in an amount sufficient to ensure completion of construction without any expense to the City.
- c. The property owner shall bear all costs for any extensions pursuant to subsection (a) above, including, without limitation, construction, engineering, inspection, and any other professional costs, unless otherwise agreed by the City Commission.
- d. Where the City elects to extend the sewer system to vacant property, all costs incurred by the City in doing so shall be paid in full by the property owner within 90 days of issuance by the City of an invoice for such costs. At the request of the property owner, and with approval of the City Manager, these costs may be deferred and paid by the property owner, together with interest at a rate of 5% per annum, prior to issuance of a building permit for any construction on said property. In such event, the property owner shall execute a lien in favor of the City, in form as prepared by the City Attorney, to secure repayment of those costs, which lien may be added as a special assessment on the next City tax roll.

Section 2. Severability.

Should any provision or part of this Article be declared by any court of competent jurisdiction to be invalid or unenforceable, the same shall not affect the validity or enforceability of the balance of this Article, which shall remain in full force and effect.

Section 3. Repealer.

All other ordinances or parts of ordinances in conflict with this ordinance are hereby repealed only to the extent necessary to give this Ordinance full force and effect.

Section 4. Savings clause.

Nothing in this Article shall be construed to affect any suit or proceeding pending in any court or any rights acquired or any liability incurred, or any cause or causes of action acquired or existing, under any act or ordinance hereby repealed as cited in Section 3 of this Ordinance; nor shall any just or legal right or remedy of any character be lost, impaired, or affected by this Ordinance.

Section 4. Effective Date.

This Ordinance shall become effective fifteen days after enactment and upon publication as provided by law.

Section 5. Adoption.

This Ordinance is hereby declared to have been adopted by the City Commission of the City of Pleasant Ridge at a meeting duly called and held on the ____ day of _____, 2017, and ordered to be given publication in the manner prescribed by law.

James Breuckman, City Manager

Amy M. Drealan, City Clerk



LAW OFFICES

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OF COUNSEL:
KEVIN M. CHUDLER
SARAH J. GABIS
LINDA S. MAYER

June 7, 2017

VIA ELECTRONIC MAIL

Mr. James Breuckman, City Manager
City of Pleasant Ridge
23925 Woodward Avenue
Pleasant Ridge, Michigan 48069

**Re: City Code Amendment
Extensions of Water Systems**

Dear Jim:

As we previously discussed, enclosed is a simple amendment to the City Code with regard to extension of the City water system. The amendment allows such extension to be done either by the City on its own initiative or on petition by property owner(s). In all cases, all costs of the extension are to be paid by the property owner. In the event the City elects to extend water service to a vacant lot that does not currently have service, then the costs must be paid by the property owner within 90 days of being invoiced, or at your discretion, prior to issuance of a building permit for any construction on that property.

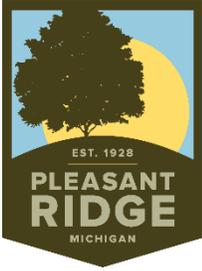
Please call or reply with any concerns or if you need anything further from me on this.

Very truly yours,

ADKISON, NEED, ALLEN, & RENTROP, PLLC

Gregory K. Need.

/mms
Enc.



City of Pleasant Ridge

James Breuckman, City Manager

From: Jim Breuckman, City Manager
 To: City Commission
 Date: August 3, 2017
 Re: City Code Amendment Public Hearing – Ridge Road Front Yard Fences

Overview

Attached is an ordinance for introduction to amend the City Code to allow front yard fences on properties that front upon Ridge Road, with certain restrictions and standards.

Background

As discussed at the May City Commission meeting, Staff has prepared an ordinance amendment to allow for front yard fences on properties that front upon Ridge Road. As discussed at that meeting there are already a number of front yard fences that exist on Ridge Road, which is a pattern that does not exist anywhere else in the City.

Before drafting the ordinance, we completed a survey of existing front yard fences to measure the setback from the sidewalk, height, and materials. The following table summarizes the results:

Address	Setback	Height	Material
16 Ridge	24 inches (fence) 14 inches (columns)	60 inches (fence) 65 inches (columns)	Wrought Iron (fence) Brick (columns)
38 Ridge	Only along side yard	44 inches	Wood
41 Ridge	12 inches	48 inches	Wrought Iron
50 Ridge	12 inches	40 inches	Wood

Additionally, the following houses which front upon an intersecting street have fences along their Ridge Road side yard frontage:

Address	Setback	Height	Material
31 Elm Park	7 inches	58 inches	Stone Columns
32 Elm Park	24 inches	48 inches	Wrought Iron
25 Poplar Park	19 inches	24 inches	Field Stone Wall

The above survey serves as the basis for the proposed fence standards, which allow for wood or wrought iron fences up to 48 inches in height to be located in front yards along Ridge Road. Additionally, stone or brick columns with a height of 5 feet may be incorporated into the fence, spaced at least 12 feet apart.

Additional standards include a maximum opacity of 50%, allowing for low stone walls not higher than two feet, and clarifying that all fences must comply with the corner unobstructed sight distance requirements.

Requested Action

City Commission consideration of the proposed ordinance.

City of Pleasant Ridge
Ordinance No. ____

AN ORDINANCE TO AMEND THE CITY OF PLEASANT RIDGE CODE OF ORDINANCES,
CHAPTER 14 – BUILDINGS and BUILDING REGULATIONS.

THE CITY OF PLEASANT RIDGE ORDAINS:

Section 1.

Chapter 14, Article V – Fences, Sec 14-117 is amended to read as follows:

Sec. 14-117. – Front yard fences.

- (a) Terms defined in Chapter 82 shall have the same meaning when used in this section.
- (b) No fence shall be constructed in front of the front building line, except as permitted by subsection (b), below.
- (c) Properties which front upon Ridge Road may construct fences in the front yard in accordance with the following standards:
 - 1. Such fences shall only be constructed out of wood or wrought iron. Except as allowed by subsections 4 and 5, no other materials are permitted, including chain link fences or materials which mimic the appearance of wood or wrought iron, such as composite, vinyl, or aluminum.
 - 2. Such fences shall have a maximum height of four feet above the surrounding grade.
 - 3. Except as allowed by subsection 5, such fences shall have a maximum opacity of 50%, leaving at least 50% open for the passage of air and light.
 - 4. Stone or brick columns with a minimum spacing of 12 feet may be used as part of the fence. Such columns may not be more than 18 inches wide or five feet tall, measured from the surrounding grade.
 - 5. Low brick or stone walls with a height not exceeding two feet above the surrounding grade are permitted.
 - 6. Such fences shall comply with the unobstructed sight distance requirements of Section 82-165(d) and the unobstructed sign area requirements of Section 82-165(e).

7. For the purposes of this section, surrounding grade shall mean the sidewalk ground elevation for fences that are located along the front property line, and the average ground elevation within 5 feet of a side property line.

Section 2. Severability.

Should any provision or part of this Article be declared by any court of competent jurisdiction to be invalid or unenforceable, the same shall not affect the validity or enforceability of the balance of this Article, which shall remain in full force and effect.

Section 3. Repealer.

All other ordinances or parts of ordinances in conflict with this ordinance are hereby repealed only to the extent necessary to give this Ordinance full force and effect.

Section 4. Savings clause.

Nothing in this Article shall be construed to affect any suit or proceeding pending in any court or any rights acquired or any liability incurred, or any cause or causes of action acquired or existing, under any act or ordinance hereby repealed as cited in Section 3 of this Ordinance; nor shall any just or legal right or remedy of any character be lost, impaired, or affected by this Ordinance.

Section 4. Effective Date.

This Ordinance shall become effective fifteen days after enactment and upon publication as provided by law.

Section 5. Adoption.

This Ordinance is hereby declared to have been adopted by the City Commission of the City of Pleasant Ridge at a meeting duly called and held on the ____ day of _____, 2017, and ordered to be given publication in the manner prescribed by law.

James Breuckman, City Manager

Amy M. Drealan, City Clerk

