The Mini Page®

CELEBRATING 50 YEARS!

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Next Week: Women in Congress

Our Cities' Systems

U.S. Air Force photo/Airman 1st Class Tristan D. Viglianco

Mini Fact:
As people use more energy, power plants have to make improvements to keep up.

When you walk along a sidewalk, fill a bucket with water or turn on the TV, do you ever wonder how those things are possible? We call highways and bridges, trash collection, traffic signals and much more **infrastructure**. They all help make cities more livable.

Many parts of our infrastructure are obvious: We can see roads, subway stations and playgrounds. But other important systems are not so obvious.

Let's learn more about the "hidden" systems that make our cities and homes run well.

Power

You probably walk into a room and turn on the lights without even thinking about how they work. But the electricity has to come from somewhere!

The power for most of our homes is made in **plants** or **stations**. Many of the plants burn coal or natural gas to heat water and make steam. The steam spins the blades of **turbines**, which turn a **generator**. Copper wires on the generator spin around **magnets**, producing electricity.

photo courtesy National Science Foundation

A nuclear power plant.

Other plants use an element called **uranium** to heat the water. These are called **nuclear** power plants. Power can also be generated by flowing water, as in a dam, by wind turbines or by solar panels collecting the sun's energy.

After the energy is made, it's carried through wires to our homes. Some of the wires are underground. Other wires, especially outside the city, are on poles. Once inside a home, other wires carry power to a switch and transfer the electricity to a light or appliance.

Water

We turn on the faucet when we're thirsty or it's time to take a bath. We might see water towers, but we don't see the underground pipes that carry the water.

Usually, **reservoirs** and **dams** outside of cities collect and store water. The pipes move water to **treatment plants**, where dirt and other stuff are strained out. Then engineers add chemicals to kill any germs that might make people sick.

When it's clean, water is pumped to homes and businesses.

But what about on the other end? When we flush a toilet or send water down the drain, it returns to the treatment plant through the **sewage system**. It gets cleaned there and is eventually returned to rivers and streams — until it repeats the cycle, returning to our homes.

photo courtesy Clark County, Washington

A wastewater treatment tank.

Communication

photo by Ervins Strauhmanis

A cellular tower.

Most Americans have several different choices for communicating with one another: mobile phones, email, landline phones, the postal service. Today, computers, cell towers and satellites are essential to all of these methods of getting in touch.

Engineers

To make these and other parts of our infrastructure work, we depend on engineers.

Engineering is using imagination and technology to solve a problem. Some engineers figure out how to build things. Others invent and design ways to make existing things work better.

For example, making sure people have access to clean water might involve agricultural, environmental and bioengineers. Protecting our digital information is a goal for software and mechanical engineers. Chemical engineers might work on the best ways to produce new medicines.

U.S. Army photo by David Kamm, NSRDEC

A chemical engineer with the U.S. Army.

Resources

On the Web:
- bit.ly/MPengineer

At the library:
- "Engineering" by Tom Jackson
- "Peeking Under the City" by Esther Porter

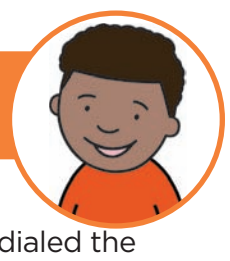
Try 'n' Find

Words that remind us of infrastructure are hidden in this puzzle. Some words are hidden backward or diagonally, and some letters are used twice. See if you can find:

BRIDGE, CELLULAR, CITIES, DAM, ELECTRICITY, ENGINEER, GENERATOR, HIDDEN, HIGHWAY, INFRASTRUCTURE, MAGNET, NUCLEAR, RESERVOIR, ROADS, SEWAGE, STATION, TURBINE, URANIUM, WATER.

D	N	W	C	E	L	L	U	L	A	R	E	T	A	W
T	A	Z	I	Y	A	W	H	G	I	H	S	W	E	R
E	B	M	O	R	E	E	N	I	G	N	E	R	G	O
N	N	E	D	D	I	H	S	D	A	O	I	A	A	T
G	E	N	I	B	R	U	T	D	I	T	T	E	W	A
A	G	N	O	I	T	A	T	S	A	M	I	L	E	R
M	D	J	U	R	A	N	I	U	M	O	C	C	S	E
C	I	R	E	S	E	R	V	O	I	R	R	U	S	N
E	R	U	T	C	U	R	T	S	A	R	F	N	I	E
O	B	P	E	L	E	C	T	R	I	C	I	T	Y	G

Mini Jokes



Ellen: What did the gorilla say when it dialed the wrong number?

Ennis: "King Kong ring wrong!"

Eco Note

"Clean" energy sources use natural forces, such as sunlight, wind and flowing water. For example, a tidal station uses a large dam called a **barrage** built across a river estuary. The tidewater is trapped to spin turbines linked to a generator. Free-standing generators can also be built out at sea to harness tidal currents. Waves contain huge amounts of energy, but scientists are still studying the best ways to use wave power.

adapted with permission from "50 Things You Should Know About the Environment" by Jen Green, © QEB Publishing Inc.

Cook's Corner

Baked Cauliflower

You'll need:
- 1 head cauliflower
- 3 tablespoons butter, melted
- 1/4 cup parmesan cheese
- 1/2 cup bread crumbs
- 1/2 cup reduced-fat shredded cheddar cheese

What to do:
1. Cut the cauliflower into 1-inch pieces.
2. Place in 1 inch of water and microwave on high for 5 minutes.
3. Meanwhile, combine melted butter, parmesan cheese and bread crumbs in a bowl.
4. Drain water from cauliflower; place in a medium-sized baking dish.
5. Spoon bread crumb mixture over cauliflower. Top with shredded cheddar cheese.
6. Bake at 350 degrees for 20 to 25 minutes. Serves 4.

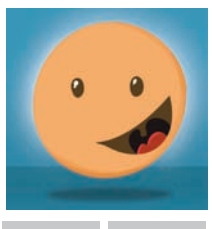
* You'll need an adult's help with this recipe.

For later:

Look in your newspaper for articles about new infrastructure being built in your city.

Teachers: For standards-based activities to accompany this feature, visit: bit.ly/MPstandards. And follow The Mini Page on Facebook!

7 Little Words for Kids



Use the letters in the boxes to make a word with the same meaning as the clue. The numbers in parentheses represent the number of letters in the solution. Each letter combination can be used only once, but all letter combinations will be necessary to complete the puzzle.

1. anxious (7) _____
2. kind (6) _____
3. cows (6) _____
4. you fix your hair with it (4) _____
5. they store electricity (9) _____
6. not true (5) _____
7. empty inside (6) _____

CO	BAT	LOW	CAT
TLE	WOR	FAL	HOL
TLE	TER	RI	ED
IES	MB	GEN	SE

Answers: worried, gentle, cattle, comb, batteries, false, hollow.