

Take a Grand Tour of the solar system at twice the speed of light! The planets have aligned for you during the International Year of Astronomy along the biking and hiking trails between Madison and Mt. Horeb.

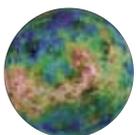


Near the south end of Monona Terrace at the bike trail on Lake Monona **the Sun** has shrunk to about 24 feet in diameter, a factor of nearly 200 million to one.

To create Planet Trek Dane County, we reduced all the distances and dimensions of the solar system by this factor to create a scale model. Join us for a planet trek! But before leaving the sun, remember to look for the PTDC Sun marker (in the silver posts). And remember to check the time before you leave.



Departing the Sun along the trail, it's an easy walk to **Mercury**, a dense sphere about the size of a walnut in PTDC. As with all the planets, remember that Mercury is orbiting around the sun, so visualize a circle centered back there at the sun--that's roughly Mercury's orbit. Don't forget to find the PTDC marker.



Follow the trail to **Venus** (be careful crossing the street!). The scale model Venus, about the size of a medium apple or peach, orbits in a nearly perfect circle around the Sun. The PTDC marker tells you more.



Soon you reach **Earth**, near the boat house. Similar in many ways to Venus, Earth would also be the size of a medium apple. Where's our moon? Line up 30 apples; that's the distance to the moon. Put a peach pit at the end of the line; that's the moon. Did you check the time when you left the Sun? It takes light 8 minutes to reach Earth from the Sun. How long did it take you?



Near the railroad crossing you reach little **Mars**, a golf ball, about 3/4 of a mile from the PTDC Sun. Out here sunlight has about half the intensity we feel on Earth, the atmosphere

at the Martian surface is 100 times thinner than Earth's, the temperature averages around 80 degrees below Fahrenheit zero. From here, as we cross W. Washington St., we enter the transition zone from small, dense planets to the gas giants. The asteroid belt begins soon after we leave Mars.



Just past Mills St. is the dwarf planet **Ceres** at a distance nearly double Mars's from the Sun. Ceres is the largest of the millions of asteroids, most very small, that orbit in this zone where a planet might have formed but for the powerful agitation from Jupiter. Most asteroids are distributed in the "main belt," which extends from here halfway to Jupiter.



Near the Edgewood St. overpass we reach **Jupiter**, over five times Earth's distance from the Sun. Imagine a sphere big enough to fill a hula hoop, and fill it with twice the mass of all the other planets combined: that's the PTDC Jupiter. Large as it is, Jupiter is only about 1/1000 the mass of the sun. Several hundred Jupiters combined would barely be enough to form a respectable star.



Just past Midvale Blvd., at **Saturn**, the Sun's light is only one-twentyfifth as strong as we feel

it on Earth. A large beach ball, about three-fourths the diameter of Jupiter, could represent Saturn at the PTDC scale. All the outer planets have ring systems, but Saturn's rings, visible even from Earth (back at the boat house) in small telescopes, are the prize winners. Check the PTDC marker to see how wide they would be. (Note that we'll enter the DNR's Military Ridge Trail before reaching our next planet. Pay the fee at the self-service kiosk—or purchase a season trail pass so you can voyage through the solar system whenever you like.)



It's a long way to **Uranus**, near Goose Lake along Verona Rd. Uranus, in our scale model, could be represented by a beautiful blue basketball. The PTDC marker shows how, unique among the planets, the entire Uranus system, including moons, rings, and planetary spin axis, is tipped far from the usual orientation to the plane of its orbit. Consider a refreshing stop in Verona, which is about halfway to our next planet.



Neptune, another lonely blue basketball in our PTDC model, orbits through rich Dane County wetlands in a near perfect circle. Here the Sun delivers only one-ninethundredth the energy available at Earth's distance. Despite meager solar energy available, Neptune (and Uranus too) have very energetic atmospheres that science has yet to explain fully. You can renew your own energy supply in Riley, because the end of the line is many millions of miles ahead.



We end our scale model in Mt. Horeb with **Pluto**, although the Sun's influence continues far beyond this point. Pluto's orbit is highly elliptical, coming as close to the Sun as Neptune's orbit, but going out as far as 50 times Earth's distance from the sun, which is where we mark it in the model. Light travel time to Pluto from the Sun is nearly 7 hours. How long did it take you to traverse the distance?

Onward to the stars, the nearest would be Alpha Centauri, which, on our PTDC scale, would lie about 200,000 kilometers distant from the Sun. You'll have to continue on from here more than halfway to Earth's Moon (the real one!) to span that distance!

Thanks for trekking the solar system with us! For more information see the PTDC website at spaceplace.wisc.edu where you can also find links to share your planet trek experience. We'd love to see your comments, questions, photos, and videos.

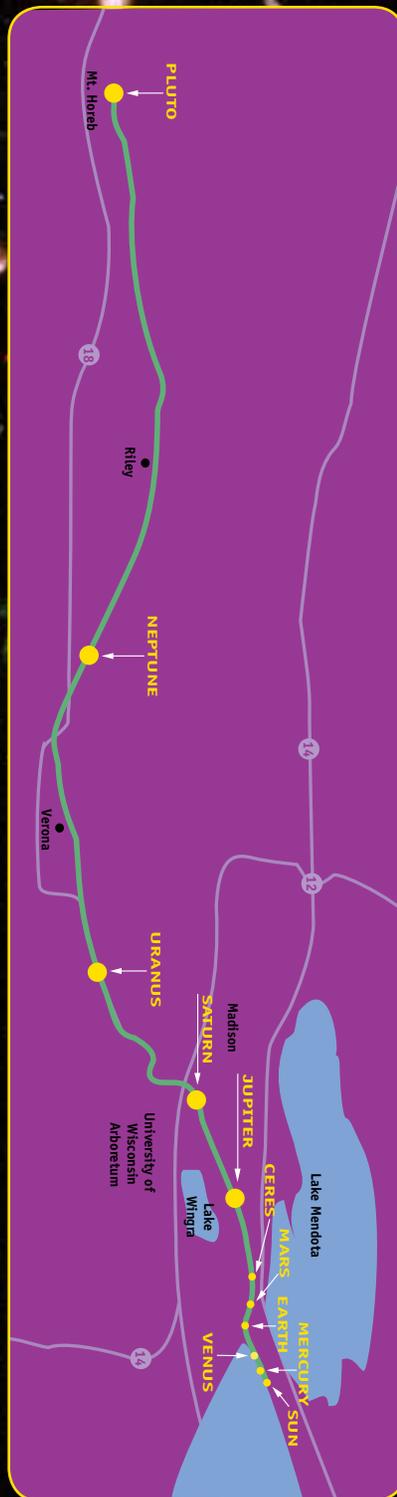
What is Planet Trek Dane County?

Welcome to Planet Trek Dane County! You're now part of a scale model of our solar system centered near Monona Terrace in Madison. In this model, we shrink the sun to a sphere about 24 feet in diameter and shrink all other sizes and distances by the same factor (which is about 200 million to one). This is one of 11 stops along the trail to Mt. Horeb, home of Pluto. UW Space Place and partners designed Planet Trek Dane County to help you visualize the vast scale of our solar system. So whether you're headed in towards the sun or out towards the edge, we're glad you paused for a moment to contemplate the immensity of our home star system. Have a great trek! For more information and to share your Planet Trek experience, visit spaceplace.wisc.edu.

Brought to you by:

Friends of Washburn Observatory, Madison Parks Dept., WI Dept. of Natural Resources, Monona Terrace, Nick Schweitzer, and Jim Peterson.

Graphic design by Tsela Barr Design.



Planet Trek Map



DANE COUNTY

Planet Trek
SCALE MODEL SOLAR SYSTEM

