

# What is Model Railroading All About?

Model railroading is fun, educational and a great way to develop and show your creativity. It is a hobby that can be enjoyed by nearly everyone.

From toddlers love of Thomas™ the Tank Engine to grandparents sharing memorable rail experiences, it is a hobby that can bring families together. Every member of your family can participate based on their age, interests and skill levels.

Parents will be amazed how technology has added realistic sound effects and functionality not thought possible of their own toy trains. It is now easy to run multiple trains on a single layout with all the controls available to a real engineer.



Enjoying Chris White's OO  
British Railway Waterloo-Wessex Line  
[OO scale is slightly larger than HO scale]



Bachmann Rail Chief HO Train Set  
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**GETTING STARTED.** An easy way to bring your family into the hobby is to purchase a train set. This consists of a locomotive, rail cars, snap-together track and a power supply to operate the locomotive. Usually, the track will only form a simple oval. Some manufacturers offer add-on track sets that include switches or turnouts to let you run the train to a separate “siding” or “spur” leading to a passenger station or an industry.

The track found in most train sets is attached to a plastic roadbed that simulates the stone “ballast”

found on real railroad tracks. It is engineered to be easily snapped together, even by school-age kids. Add-on track can be purchased separately, but be aware different manufacturers use different designs for these snap connections.

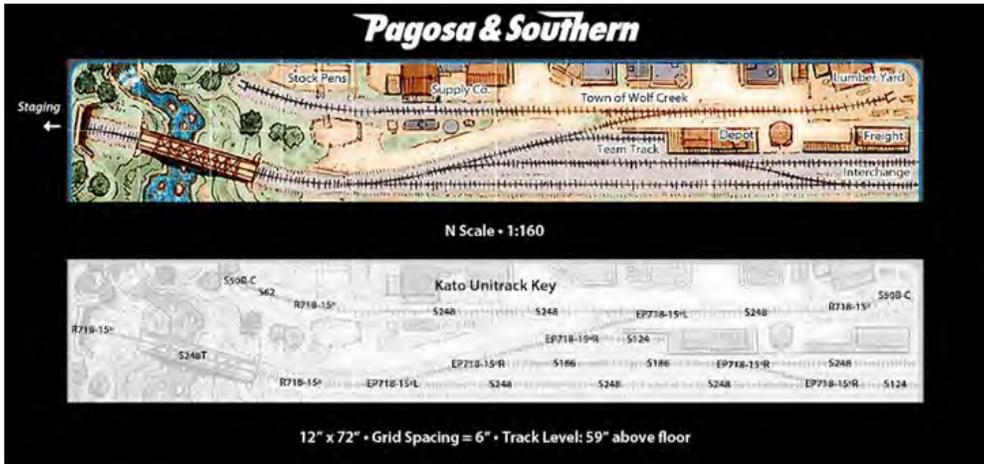
Model railroad track without the snap-fit plastic roadbed is used by most hobbyists going from a flexible train set to a train “layout” where the tracks are fastened to a panel, table or shelf. This type of track comes in a wider selection of sizes and weights, including flexible track and more types of turnouts and crossings.

Building a layout does not need to be a basement consuming railroad empire. A shelf layouts or a single sheet of plywood or foam insulating board can include enough sidings to make switching cars between industries and rail yards a fun challenge.



Bachmann E-Z Track® Expander Set  
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Groups offer plans to build “modules” of a common design. The design lets modules built by others connect like dominos. The combined modules are seen at train shows.



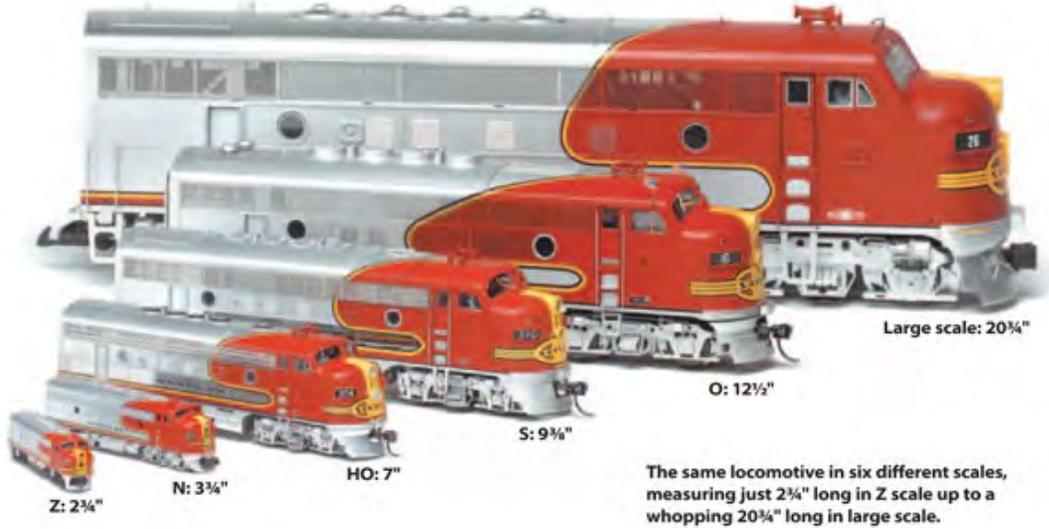
N Scale switching layout on 2' x 6' shelf designed and built by Dave Meek

Building any size layout is a chance to design a world where your railroad operates. Researching, planning and furnishing the people, buildings and scenery for that world can be done at any age—and most importantly—together.

**SCALE AND GAUGE.** These refer to the size of the trains and structures used in the hobby. Scale refers to the size of the model compared to the real thing, which is often referred to as the “prototype.” Scale is expressed as a ratio. A model the same size as a prototype would be a 1:1 scale. A model one-quarter the size would be a 1:4 scale.

Gauge refers to the distance between the two rails.

The most common scales in the hobby are listed below.



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SCALE		GAUGE
G	1:20.3 to 1:32	2.5" or 64 mm to 1.75" or 45 mm
O	1:48	1.26" or 32 mm
S	1:64	0.886" or 22.5 mm
HO	1:87	0.65" or 16.5 mm
N	1:160	0.354" or 9 mm
Z	1:220	0.256" or 6.5 mm

Obviously, the larger scales are easier to see and work with, but require larger areas for a train layout.

HO is the most popular scale and offers the widest selection of trains and accessories. N scale is also very popular as it takes up less space and has an ever-growing selection of trains and accessories.

The large G or “garden” scale is most often used for outdoor layouts. S scale is growing in popularity as manufacturers offer more items in this size. The famous Lionel trains are a type of O scale.

Another term you may hear is “narrow-gauge” model railroads. These layouts often model historical railroads where the space between the rails was less than the standard 4 feet 8½ inches (1,435 mm) used today. These railroads were often found in mountainous or rugged areas to support mining or logging operations. Modelers use standard scale rail car bodies with modified wheel sets for rails that are only 24, 30 or 36 scale inches apart (610, 762 or 914 mm.)

**POWERING MODEL TRAINS.** Prior to the 1980s, model trains were powered by DIRECT CURRENT (DC) power supplies. No electrical current flowed to the tracks until you turned the throttle. The farther you turned it, the more electricity went to the track and the faster the train ran. If you wanted to run multiple trains on a layout, you needed to wire the tracks into separate isolated power blocks and had to switch power routing as each train moved to a new block. DC powered locomotives and power supplies are still offered today.

Model railroading now features computerization and microprocessors providing greater operator control over movement, lights and sounds.

DIGITAL COMMAND CONTROL (DCC) has revolutionized the hobby. A microprocessor called a “decoder” is installed in each locomotive and is assigned a unique address, similar to the IP address on a home computer. DCC command stations produce a continuous alternating current to the track that can communicate digital information.

A throttle gains control of a specific locomotive by entering the loco’s address. The throttle controls not only the speed of the locomotive, but can also operate its lights and sounds.

You can start your locomotive by turning on the lights in the cab, playing the startup sounds of a diesel engine and ringing the bell as you start out.

You may even hear the car couplers clanging together as the train starts moving.

The engine sound is directly linked to its speed, as is the chuff-chuff-chuff and smoke exhaust of a steam engine. Slowing down? Expect to hear the metal-on-metal squeal of the brakes. Some locos even have recorded conversations from engineers and conductors, as well as industrial and farm sounds.

DCC allows several engineers to run separate trains on the same layout using hand-held throttles. It can link several engines to work together to haul long and heavy trains uphill. A DCC throttle can also throw turnout switches and control other animations on a layout with the appropriate accessories.

Many of today’s DCC locomotives can run on DC power, but with less control over lights and sounds. DC locos can be upgraded to DCC by adding or changing a decoder.

DCC command stations, throttles and decoder equipped locomotives are more expensive than traditional DC model railroading. But they offer a real engineer’s perspective and a full sensory experience.



Digitrax Zephyr Express DCC Command Station  
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NCE Pro Cab Deluxe Master Cab Handheld Throttle  
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**LOCATION.** If you progress to building a layout, choosing the location you want to model is also a fun process. Want it to be your home town, or a favorite vacation spot? Towering redwoods or the desert southwest? Maybe even a fantasy world of your own creation. It is only limited by your family's imagination.



**ERA.** Trains have been around for more than 200 years, taking many forms and using different sources of power. Steam engines operating on wood, coal and fuel oil were replaced by diesel and electric engines. Each era offers unique looks and styles.

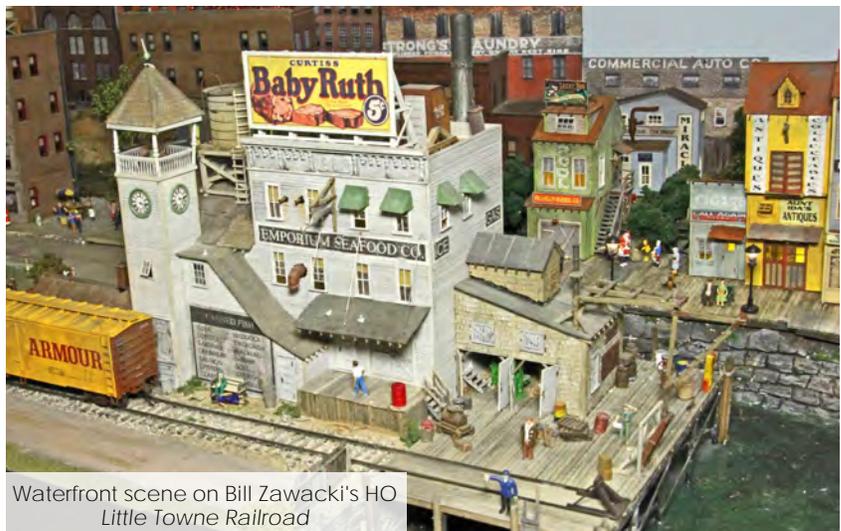


Over time, many hobbyists find an era of particular interest. A popular era is the transition period from steam to diesel engines in the 1940s to 1950s because it includes very distinct locomotives.

**STRUCTURES AND SCENERY.** Model railroading is more than laying and wiring

tracks and running trains. Many hobbyists find the greatest enjoyment creating the world that is supported by their railroad. Industries, passenger terminals, cities and farms give the railroad purpose, and are a great way to showcase your creative talent.

There is a huge selection of model buildings and other structures available in every scale. They come fully assembled or as kits, ranging from easy to assemble models to elaborate craftsman kits. There is something available to match the skill levels and interests of everyone in your family.



A big part of the fun is planning what you want your railroad to transport. The possibilities are nearly endless when you consider everything that is or was moved by rail.

Bulk minerals, grains and other raw materials are shipped in open gondolas, closed container cars and tank cars. Logging, lumber mills and mining are popular industries, as are steel foundries and paper mills.



Lumber mill on Steve Austin's On30 Elkhorn Iron & Timber Co Railroad [O scale on a narrow 30" gauge]

Finished goods are transported in box cars, auto-carriers and containers. The transfer of shipping containers from ocean freighters to specialized rail cars and trucks happens at what is referred to as "inter-modal" facilities—a growing part of the hobby.



Intermodal facility on Tom Bank's N scale North South Railroad

Food is a popular commodity for model railroaders. Farm-to-table relies on trains. Grains, oils and syrups require specialized rail cars, and perishable foods may need to be transported in refrigerated cars called "reefers." Historically, cattle and other animals were primarily shipped by rail.

And don't forget people. Sleek passenger trains with glamorous names like *El Capitan*, *Empire Builder*, *Silver Streak Zephyr* and *Twentieth Century Limited* were once the preferred way to travel. Stations ranged from small buildings on a short spur to elaborate multi-track passenger terminals with massive and ornate halls.

The businesses and industries served by your railroad are completely up to you. Having your family consider all of the options can be a very fun activity. Researching and learning how these companies operated and were served by railroads can be as enjoyable as it is educational.



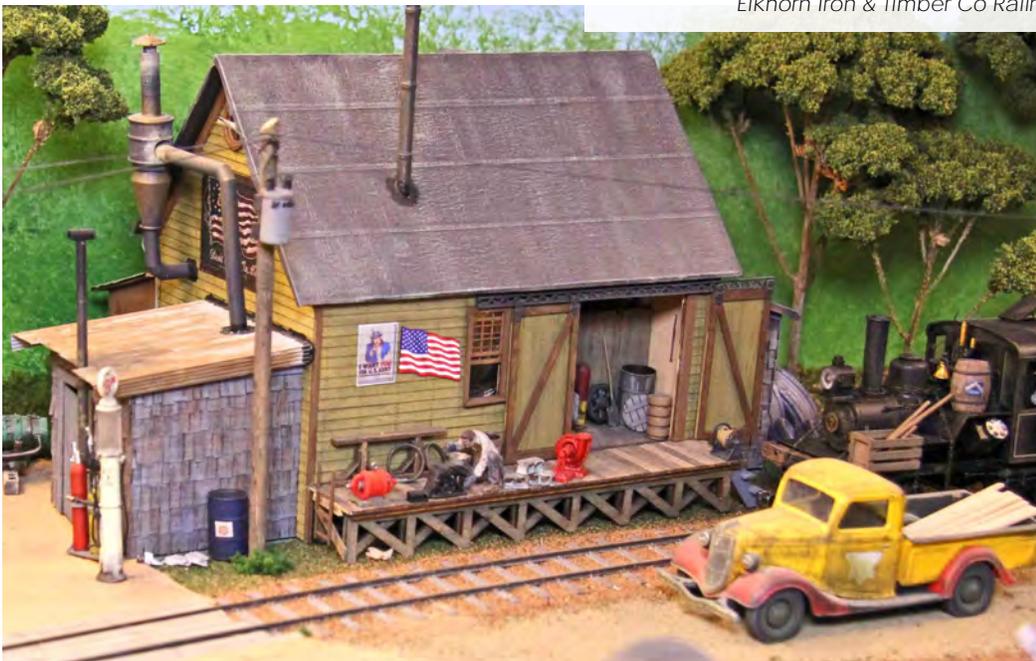
Passenger terminal on Ken Stinnette's N scale "Old Reliable" L&N Railroad

**WEATHERING.** In the real world, everything gets dusty and dirty. Paint fades from the sun. Metals tarnish and rust. Everything gets old and worn. Bright and shiny *toy* trains can become *model* trains by making them look like the hard-working prototypes of the real world.

Adding light layers of paints, washes and powders can make trains and structures look more realistic. This is a fun activity and can even be done by kids. It is a great way to develop artistic abilities and can be very rewarding.



Examples of the detailed weathering on Steve Austin's On30 Elkhorn Iron & Timber Co Railroad



Best of all, many techniques let you wash off the effects if you don't like your handiwork so you can try again.

## WANT TO FIND OUT MORE?

**Come to a PIEDMONT DIVISION meeting**, or an event like our annual PIEDMONT DIVISION MODEL TRAIN SHOW or the PIEDMONT PILGRIMAGE where members open their home layouts free to the public. Our members LOVE talking about trains and model railroading. See what we are doing by visiting our website at [piedmont-div.org](http://piedmont-div.org)

**GO TO A LOCAL HOBBY SHOP** to see and learn more about the model trains and accessories available. They will answer your questions and provide knowledgeable advice. They also have many magazines and publications about trains and model railroading—great for ideas and how-to instruction.

**Check out the NATIONAL MODEL RAILROAD ASSOCIATION** to find out everything about the hobby, including expanded discussions of these topics at [nmra.org/beginners-guide](http://nmra.org/beginners-guide)