

## MODEL RAILROADING ON A BUDGET

Model railroading can seem dauntingly expensive to a beginner. A quick look at some current prices for locomotives, for example, might make a newcomer think, "I can't afford this hobby!" However, when you look a bit deeper, and especially as you gain some experience, things can start to look a little less daunting.

Now I'm not saying that you don't have to spend money to get started as a model railroader, you certainly do. However there are some things you can economize on, and some others where you shouldn't try to. In many cases it comes down to a choice of investing more money, or investing more time. Often this works out pretty well. Youth usually has very little money, but a fair amount of time. Retired folks likewise have plenty of time, but may be on a fixed income. At the other end of the spectrum, a busy corporate professional may have a good income, but very little spare time.

Fortunately model railroading is quite flexible. It will require some investment of both time, and money, but how much of either is up to the individual. The highest cost of building a model railroad is the initial purchase. Like starting a business, starting in a new sport, buying that first car, or home; you have to come up with a pretty good chunk of "startup capital", right at the beginning. But we can do some things to, metaphorically "dip a toe into the financial water," before we take the plunge. Try buying a few simple freight car kits, perhaps one in HO-scale, and another in N-scale. This way you can get a literal feel for the size and heft of the two most popular modeling scales. If you want to go a step further, try a kit in O-scale. It's third in overall popularity, and similar in size to the Lionel toy trains you may have seen, or owned, as a kid.

Picking your favorite scale may affect your model railroading future in several ways. The larger scales need more space to accommodate their wider curves. This may be a deciding factor for you. If you have only a small space, you may want to use a small scale. If you are fortunate to have a large space available, then you can pick any scale you wish. Generally speaking, the more popular scales tend to be a bit less expensive than their less popular brethren. They also tend to have a wider variety of products available. This happens for a simple economic reason. The better any given product sells, the more companies will want to get into that popular market. More companies supplying essentially the same product generate competition; which lowers prices.

HO is the most popular scale in the U.S. It has a huge variety of available products. N-scale is next in popularity and also has a generous variety of products available, though not as much as HO-scale. The cost difference between these two most popular scales isn't all that much, but when you get into less popular scales, the cost-per-item, tends to get higher. To some extent, determined by the individual modeler, this higher cost-per-item may be partially offset by having room, and need, for fewer items. As an example N-scale allows running longer trains in a given space; because the cars and locomotives are physically smaller. But that realistically long train requires more cars; which will cost more money. On the other hand O-scale cars occupy four times the space, per car, as their N-scale equivalents. So an O-scale modeler may need fewer cars to fill his/her available layout space. This can help to partially offset the higher individual price of those few O-scale cars.

Once you have decided on a space to build your railroad, you will need to figure out what features you want on your railroad, and work toward some sort of track plan that will fit some of those features into your available space. This is not easy, and no one gets everything perfect the first time. As an example nearly all beginners try to include too many features, and/or massive industries that can't fit into their available space. Fortunately there is plenty of help available, some of it for free. The simple fact that you are looking at this forum, is a good start. Here you will find hundreds of other model railroad enthusiasts, from all over the world. Collectively they have many decades of experience in this hobby, and should be able to answer any questions you have. There is also a wealth of material available online. There are many published track plans, for all sorts of spaces, and computer programs, like scarm, which help you to create your own plan.

Now let's look at some things you can do to keep your model railroad on a reasonable budget.

Cost as affected by buying new vs. used.

In order to keep costs in line, we first have to find out what the costs are. Take a look at these web sites. [www.walthers.com](http://www.walthers.com) and [www.ebay.com](http://www.ebay.com). Walthers Co. is the largest retail supplier of new model railroad equipment in the United States. Some of the prices look pretty discouraging. A forty dollar flatcar? A two hundred and seventy five dollar locomotive? Fifty dollar buildings? If you look further though, you will see some items are less expensive, even at their full retail prices. Hang in there. Things will get better. Now check on E-bay, under "model trains" and see what similar items are selling for. A whole lot less, right. Now look at the "For sale, member to member section of this forum. It too will have lower prices. The cost of model railroad products has gone up, in fact, it has more than doubled in the last decade. So, shop around for the best deals.

Cost as affected by making vs. buying

Many things you will need for a model railroad can be made much cheaper than they can be bought. Here are a few examples. I'll use the common name first and include any special hobby term after (in parenthesis)

Buildings ("structures") are sold both as built up, ready-to-use items, and as kits. You will see that they are quite expensive in either form. However you can build them, from common materials, (called "scratchbuilding") for a fraction of the cost. This takes some research, to get photos, or plans for a structure, and you need material to build it with, but it is very satisfying to make something that is your own unique creation, and it saves a lot of money too! Structures have been built from just about anything you can imagine. Plastic, (usually styrene) wood, cardboard, and metal, have all been used. Some odd leftover stuff has been used also. I once made models of metal grain storage silos from toilet paper tubes covered in aluminum foil! Next time you're in Walmart, look around the arts & crafts department. You may see some "building material" in the form of foam core board, craft sticks {more commonly called Popsicle sticks} and other strange stuff. Just use your imagination! Of course, you can also buy raw material like basswood, styrene, embossed brick sheets, window and door castings at hobby shops, or online. Purchasing the initial supplies will cost money, but nowhere near what it would cost to buy all the structures you can build from that initial supply of material. Another example of

saving money by building vs. buying is found in one of the biggest cost items on a model railroad. Track switches (called “turnouts”) cost from \$18.00 to \$30.00 each, when bought new. Most model railroads have ten, or more. That means spending \$180.00-\$300.00 on turnouts. You can make turnouts for much less, about \$2.00-\$5.00 each. There is a catch however. I said earlier that it sometimes comes down to a tradeoff of time or money. Turnouts are a dramatic example of this. It will take you several days to a week to build your first turnout, Subsequent builds will gradually get a little faster, but you are still going to invest a lot more time in making turnouts than buying them.

The mechanism that operates a turnout is called a (“switch machine.”) It is another high cost item, and you will need to have one for each turnout on your railroad. Some turnouts, like Atlas, include either a manual or electric switch machine attached to the side of the turnout. These are big, ugly, and in plain view. They can also be somewhat unreliable, and prone to burning out, unless powered by a separate device called a (“capacitive discharge unit.”) Most other brands of turnout come without a built-in switch machine. Modelers have a choice of switch machines, Most mount out-of-sight, under the layout base. The most popular type is a machine called a Tortoise, sold by the Circitron Company. These are excellent machines but they retail for \$17.95 +tax each. There are other brands and types, some a bit cheaper, but still expensive when you need many of them. There are lower cost alternatives, however. A company called Caboose Industries sells manually operated levers that mount next to each turnout; called (“ground throws”.) They look like the equivalent device used on real railroads, but are oversize to accommodate our giant [by model standards] fingers. Ground throws are a lot cheaper than Tortoises, or other electric machines. There are other ways to operate turnouts manually In fact at least one brand of turnout, Peco, has a built-in spring which allows manual operation with no additional mechanism at all. If you use a different brand of turnout, you can make such a spring, from steel music wire, and add it yourself. Recently I have developed a low-cost, simple to build, manually-operated, and very reliable switch machine. I have posted photos, text, and a list of materials with cost; here on the forum’s “General Model Train Discussion” section. There are two versions. One is designed to use with a relatively thin layout base of plywood and/or foam. The other can be used on foam layout bases of any thickness.

Another relatively costly item is track. You have several choices. There are three basic types of track available. None of these track types should be considered “right”, or “wrong”, they are just different from each other. Each of the three types has its advantages, and disadvantages. Fine layouts have been built with each type of track. Here are your three choices.

- 1) Roadbed track.

This is a form of sectional track that comes attached to a plastic base that is intended to simulate the crushed stone (“ballast”) found under real railroad track. It is sold under several different trade names such as (“Unitrack”) made by Kato, and (“EZ-track”), made by Bachman. Roadbed track makes it easy to set up a temporary layout quickly. The track/roadbed sections lock together making temporary arrangements more stable than sectional track without roadbed. Roadbed is the most expensive type of track. Different brands of roadbed track are basically incompatible with each other, and with sectional, or flex, track without modification. However it is possible to adapt them and make them fit. Roadbed track also locks you into that

manufacturer's available choice of track shapes, and turnouts. The Bachman "EZ-track" turnouts do not have a good reputation. Many modelers have had derailments on these turnouts, and their construction is a bit flimsy. If you decide to use roadbed track, I would recommend Kato "Unitrack". It is of much better quality and has a wider assortment of curves available. Not surprisingly, it is also more expensive than other brands. The best quality product is usually also the most expensive. [Read on, there are less expensive options than roadbed track] Increasingly, roadbed track is showing up in train sets aimed at new modelers. The commercial strategy is simple. Once started with the company's roadbed track, the consumer will have to buy more of the same product to expand his/her layout.

## 2) Sectional track.

This is the type included in many older train sets. There will be rigid, usually tight radius, curved sections. A set contains just enough of these to make a circle. Some sets have a few straight pieces also. This type of track has no plastic roadbed attached. You can purchase more straight sections and curves of various sizes. Special sections like crossings, turnouts, re-railers, and terminal sections are also available. Most sectional track can be used with other brands of sectional, or flex, track without modification. Like roadbed track, sectional track is easy to set up. You simply plug the sections together into the desired shape. Unlike roadbed track, the joints between sections can come loose much more easily. Sectional track is usually nailed, or glued, down to the layout base, to keep things together. Atlas is, by far, the most common brand of sectional track. The same company publishes booklets of simple track plans. These booklets are a bit like cooking recipes. Buy x number of these pieces and y number of these, and connect according to the diagram. Most new model railroaders start out with this track system. It makes it easy to get your first layout set up. The downside is that you are being led into buying more and more Atlas products. Some of them, particularly their turnouts, are not very reliable, and can cause a lot of frustration. Sectional track, like roadbed track, also limits you to the shapes available.

## 3) Flex track

This type of track is, as its name suggests, flexible. It can be used as straight track, or shaped into any radius. Flex track is also a bit cheaper, per foot, than sectional, or roadbed, track. Because of its ability to be shaped to fit any plan, and its lower cost, flex track is the type used by most modelers to build a permanent layout. Atlas and some other brands of flex track are so flexible that they won't stay curved. They tend to spring back to straight unless held down. Micro Engineering brand flex track is an exception to this. Once bent into a given curvature, it tends to stay in that shape. However even Micro Engineering's flex track won't reliably hold the end joints between two sections in proper alignment without some sort of fastening down to a base. For this reason, flex track may not be a good choice if you are making a temporary track arrangement. On a more permanent layout, flex track can be nailed or glued down. Many things have been used as track glue. One of the most popular is latex caulk. A few dots of caulk at the joints, and along the length of the track, will hold it down firmly. If you should later need to reposition the track, it can be removed by sliding a putty knife, sprayed with WD-40, under the track.

You will also see track advertised as “code 83”, “code 55”, Etc. The code number just indicates the height of the rail in thousandths of an inch. For example “code 83 rail is 83/1000ths” high. Some model track rail is grossly oversized. Atlas offers their N-scale track (both flex and sectional types) with code 80, or code 55 rails. Scaled up to real life size, code 80 rail would be about a foot high. That’s a lot higher than any real rail ever made. The code 55 rail is a little closer to scale size, and looks more like real track. Operationally either size rail will work fine. The codes are simply about appearance.

Locomotives are another expensive item, but this is one thing that you should not try to skimp on. One decent quality locomotive will be enough to get you started. By decent quality, I don’t mean the most expensive, elaborately detailed, locomotive you can find! That will cost a small fortune, and it won’t run any better than a less expensive, but still well-made, locomotive. Our hobby has seen great improvement in the overall quality of locomotives available, in recent years. Some of the old locomotives were absolute dogs that never worked right. Today, nearly any locomotive you pick will run well. That’s what you should look for, smooth running. Super detail can be added later if you wish, but it’s difficult/impossible to turn a poor running loco into a smooth runner. Still you have to make a choice. So I will recommend a couple of brands. You can also check out other sections of the forum to learn about other member’s favorites. My all-time, hands-down favorite brand is Kato. I have yet to see a Kato brand loco that didn’t run superbly! As a bonus their detail is also excellent. The bad news is their not cheap. However they are worth every penny, and as I said, this is one area where you should not try to skimp on price. Other good brands are Athern, Stewart and Intermountain. I have modeled in HO-scale, but so long ago that my knowledge of that scale’s products is limited. My recommendations for HO-scale locos are primarily based on what I have read here on the forum, and in Model Railroader magazine. I am currently doing my model railroading in N-scale; and have been doing so for a couple of decades. So I am very familiar with what’s good or bad in N-scale. Fortunately the same manufacturers sometimes offer locomotives in both scales. Athern has been a staple source of good running, inexpensive, locomotives in HO-scale for many decades. I had Athern locomotives as a teenager (I’m 68 years old now) and they were good then, and they’re even better now. Kato has been renowned for their excellent N-scale locos, but they make some HO-scale locos as well. Kato has also built the drive mechanisms for other brands. I believe that Stewart, and possibly Intermountain, have used some Kato drives in some of their HO locos.

The best place to see, and run, locomotives is at your local hobby shop, if you are fortunate enough to still have one. Hobby shops have been going out-of-business all over the country. This is largely due to competition from online. In many places, buying online is the only practical choice. The nearest hobby shop may be hundreds of miles away, and they may not even carry what you want. It’s always wise to phone before traveling far. If you are buying online; first check the forum and ask for recommendations for the more reliable online vendors. Phone, or E-mail the vendor before buying. Ask them about their return policy and the possibility of a satisfaction guarantee. The best vendors will offer one, or both. There are a lot of not-so-ethical vendors out there in cyber space; stick to those others recommend. I would also suggest staying away from E-bay, at least for now. With E-bay you are buying from some unknown individual person, not an established online company that wants to keep your business; and

keep their good reputation. If you are a minor, please have sense enough to consult your parents before buying online. They have your interests at heart. Some random, who-knows-who on the internet most likely does not!

### Scenery materials

This used to be one area where low prices were common. Today that is less true. The price of scenery material has gone up a lot in recent years. To be fair, the quality, and variety of scenery products available has also increased dramatically.

Most scenery materials are packaged, and high priced, versions of common material. Thus if you make them from generic material, you can save some money. Sometimes, simply buying the commercial product is the sensible way to go. For example, if you were building a small railroad, and only needed a small quantity of green grass to use; there would be no point in trying to make your own. Instead just go ahead and buy a bag of commercial ground foam, and use that. For a huge layout though, the total cost of using large quantities of commercial ground foam would be quite high. In that case, it might be worthwhile to grind, and dye your own foam. It's more work (and time) but less money. It's your choice.

In the earlier days of model railroading the extensive variety of products we have now, simply didn't exist. Back then modelers had to improvise nearly everything. They invented techniques of re-purposing whatever was available to make scenery. Modern, commercial, scenery products produce spectacular results, but the old techniques still work, and can produce decent looking results for less money.

Some of the "old school" things I've used are:

#### Real dirt:

It doesn't get more basic than finely sifted soil from the backyard. I sift first with window screen or a tea strainer. I then crush the dirt that gets through with a brick sliding over the dirt on a concrete floor. This reduces it to fairly small dust. The dirt is then sifted again through a very fine mesh piece of scarf fabric. The result is my N-scale dirt which I save in a container to use on the layout, If this sounds like too much effort, you can buy many sizes of very finely sifted dirt from a sand and gravel dealer. Their price will be a fraction of the cost of "official" scenery dirt.

#### Sander dust:

"Back in the old days, modelers used sawdust, colored with fabric dye for many scenery items. Grass, leaves, and soil were simulated with sawdust. The results were quite crude by today's standards: but at that time it was one of the few things they had. Actually the most unrealistic characteristic of sawdust (assuming you got the color right) was its size. The stuff is just too big to represent grass, or soil, in small scales. Enter sander dust. An electric sander produces much finer dust than a saw. Using fine grit sandpaper, the dust is about the size of well, actual household dust. Using Rit brand fabric dye, I've created plenty of leaves, and ground cover, in several colors. As mentioned earlier you can make your own ground foam too. This is the same stuff sold commercially, just much cheaper.

Recently another form of model grass has become popular. It's called "static grass" and its big advantage is its ability to be stood up on end by static electricity. This makes the model grass look more like real grass, since it grows vertically. Noch was one of the first companies to introduce static grass. They also sell a special electric charged applicator for about a hundred dollars. Meanwhile Harbor freight [www.harborfreighttools.com](http://www.harborfreighttools.com) sells an "electronic flyswatter", which can do the same job; for about ten dollars. If you want to try static grass, you can decide which one you want to pay for.

Trees:

Making at least some of your own trees is an economic necessity for those of us who need a lot of them. Commercial model trees are one of the most expensive scenery items on the market. It really pays to make your own. There are several methods. One of the most common is to gather natural twigs or parts of natural bushes, like goldenrod, to serve as tree trunks. The foliage, or leaves, can be a commercial product called, logically enough, foliage! It's sold by Woodland Scenics, and other companies. Modelers also simulate the dense branch structure of some real trees with "Polly-fiber" this gauze-like material is also sold by Woodland Scenics, but at high prices. You can buy the same material in bulk packs, for much less, at fabric stores or Walmart. It is sold as "fiber fill", or "cotton batting". It is used to fill pillows and stuffed animals. This comes in white, instead of the commercial product's green, but you will end up spray painting it a different color anyway, so the initial color doesn't matter. The material is stretched out thin and transparent, over the tree trunk (also called an "armature"). Then the trunk/fiber assembly is spray painted a suitable color. Cheap hairspray is used as a spray adhesive and the tree is finally sprinkled with ground foam, or sander dust, to simulate leaves. With a little practice, you will be able to turn out plenty of decent-looking trees, without spending a fortune.

Another type of tree, conifer trees like pine and fir trees, are a bit harder to make, but still quite possible, and much more economical, to build yourself. I model an area near Seattle, Washington. It has thousands of conifer trees all over it. So, I needed a model conifer forest! I adopted an old method of modeling conifers called "furnace filter trees." I wrote, and posted, an article on how to do it. It's in the "General Model Train Discussion" section. If you are interested you can use the search function to locate "Paintbrush Pine Trees" by Traction Fan. The materials I used were different from the original method. The trunks are made from cheap artists' type paintbrushes, and the branch structure from 3M Scotch Brite scrubbing pads.

Water:

Modelers have many choices for modeling the water in the ponds, and rivers, on their layouts. There are several expensive commercial products available. Or you can make your water from generic materials, at much lower cost. You may wonder, "why not use real water?" Well, that has been done, but it's a lot of trouble to keep the water confined to the spot where you want it, and to keep it from getting stagnant, and smelly. There are other problems with real water too. One of them is that, ironically, it doesn't look all that real! Instead modelers have used paint, and some sort of clear glossy material, to form the bodies of water on their layouts. It's simple to do, and quite effective. I've had visitors touch the fake water on my layout to see if it was wet! All you need do to simulate water is to

paint the large center area black, then fade into light brown at the edges. These colors will make the pond appear deeper at the middle, and shallow at the edges. Glue down any logs, trash, etc. you want on the “bottom” of the water. When the paint and glue are dry; it’s time to add the shiny coat. This can be varnish, clear glossy paint, or epoxy resin. I use a product called “Modge Podge” that I found in the arts & crafts section in Walmart. It brushes on as a dull white paste, but dries perfectly clear, and shiny. The shine is what makes the “water” look “wet” enough for folks to try dipping their fingers in it!

So there you have it. Some suggestions that you may want to adopt to keep your railroad on a budget.

Have Fun!

Traction Fan