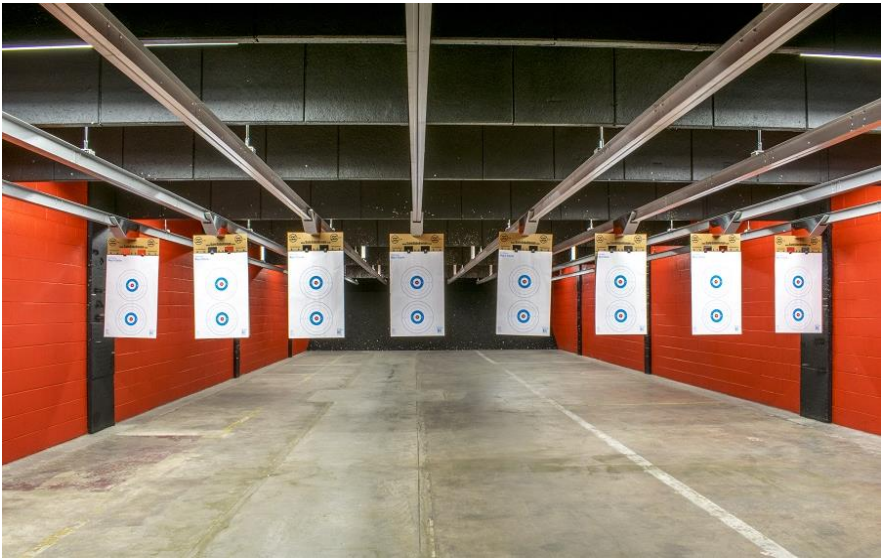


Carey's
Answer #
Book

4

ABOUT OPERATING COSTS

Protect Your Bottom Line as You
Protect Your Staff and Customers



SafeSide Tactical in Roanoke, VA has reduced Operating Costs to \$1.75 to \$2 per lane-hour by switching to bag filters in order to reduce the frequency of filter changes down to a 10-14 week replacement cycle. According to owner Mitch Tyler, "The filters themselves don't cost much more and, since they're cloth, more can fit into the bin for recycling."

Come to Carey's for answers.

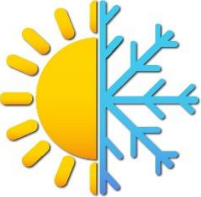



Range owners understand the need to maintain safety and comfort for their employees and customers, and this is Priority One. At the same time, protecting the bottom line is essential to business success. Here are some tips to budget for Operating Costs, as well as steps that you can take to reduce costs wherever possible...

Q. What are the components of Operating Costs?

A. Direct Operating Costs include Electric Power to run fans and the air conditioning (A/C), Gas for heating (in most cases), the cost of Filter Replacement, and Disposal of filters. **Indirect Operating Costs** also include regular Range Maintenance including Replacements for Parts other than filters and Wages and Benefits paid to personnel (your Rangemaster, for example) who supervise the range and oversee users.

Q. How much should I budget for Direct Operating Costs?

Operating Cost Benchmarks (Cost per lane-hour)	
	
Full HVAC Recirculation System	Heat Only Purge System
\$2.00 or less	\$1.00 or less

A. As a general rule, allow \$2.00 per lane-hour (\$0.50 per foot of width) for a shooting range with 4-foot wide lanes and full Heating, Ventilation and Air Conditioning (HVAC) for Direct Operating Costs. Allow \$1.00 per lane-hour (\$0.25 per foot of width) for a range with Purge Systems with heating and/or evaporative cooling. These benchmarks are conservative. Most range owners are able to do better. Carey's will be happy to help you with a cost estimate for your specific range design. Note: These budgets assume the height below the baffles and safety ceiling to be 8 feet. Adjustment may be needed for taller spaces.

Q. How does this translate into an annual Operating Budget?

A. Begin with calculations for Direct Operating Costs:

- Hourly Cost = \$1.00 or \$2.00 (see preceding) x Number of Lanes. If multiple bays have individual systems, calculate all of the lanes in the bay when the system is running.



You will need to make an adjustment if your lanes are wider than 4 feet or if the baffles are higher than 8 feet. Talk to your friends at Carey's to help you with this exercise.

- Weekly Cost = Hourly Cost x Hours per Week that the lanes are in operation.
- Annual Cost = Weekly Cost x 52, or adjust as appropriate for seasonal changes in occupancy.

Q. Are my Operating Costs likely to be what I expect, with no surprises?

A. Yes – If the systems are operated per the design, the operation costs will be very predictable. Do not be surprised by individual monthly costs as the estimates are based on annual consumption divided equally across all of the hours of operation.

Q. What can cause Operating Costs to run over budget?

A. Improper maintenance of equipment or filters can cause cost overruns. Equipment maintenance is especially important. If condensers are not kept clean on the A/C units, the operation cost is much higher.



Biannual range maintenance at Denver Police Department.
Courtesy of MT2.

Q. Where else can I look to improve efficiency?

A. It is also important with multiple bays to manage the use to match the occupancy. As a simple example, let's assume you have two 10 lane bays, and one bay is full with 10 shooters. An 11th shooter comes into the store. If you are coming up to a busy time of day, it makes sense to open your other bay. If this is traditionally a slow time, you will be better served waiting until one of the shooters on the bay finishes and a lane opens up. Good lane utilization management can reduce your operation costs.

Q. What other strategies can help reduce Operating Costs?

A. We asked our customers to share approaches they are taking to successfully lower operating costs. Here's what they told us is working for them –

- Change pre-filters and mid-filters on schedule to extend the life of the more expensive HEPA filters. Keeping on schedule also avoids the extra power costs to push air through clogged filters.
- Economize on filter disposal costs by slowly filling up a big shipping container in order to do one big haul instead of multiple little ones. If you have a high volume of disposed filters, consider investing in a compactor, which is available from AcuSport. Note: Make sure you are following EPA limits for stored waste at your location. **Accumulation Time Limit is: 90 days (Title 22, CCR, section 66262.34(a)).**



Changing pre-filters regularly extends life of HEPA filters.



Made to store the equivalent of four 55-gallon drums, the **Cubic Yard Box (Gaylord Box)** is the most economical way to ship and store solid hazardous or non-hazardous materials. Available from Container Distributors, Inc.

180 days or 270 days if the distance to the treatment or disposal facility is more than 200 miles. Any quantity of acutely or extremely hazardous waste must be removed in 90 days (Title 22, CCR, section 66262.34(d)).

- Switch to MERV 14 or 15 high capacity bag filters only as pre-filters that allow a reduced frequency of filter changes (down to a 10-14-week cycle in most cases). The filters themselves don't cost much more and since they're cloth, more can fit into the bin for recycling.



Bag filters.

- Talk to the staff at Carey's for the best filter suggestions based on their continual testing and monitoring of systems. *Your results may vary.*
- Manage your lane and bay usage for the best economics.

Q. Can I cut costs by not using HEPA filters?

A. NO! It may be tempting to try using pre-filters alone to avoid the cost of HEPA filter replacement. To do so, however, risks inadequate removal of lead contamination which can result in disciplinary action by OSHA and/or the EPA. Fines and mitigation costs can run into the hundreds of thousands. (For more discussion, see Answer Book #1, The HEPA Filter Book.)

More Answer Books from Carey's

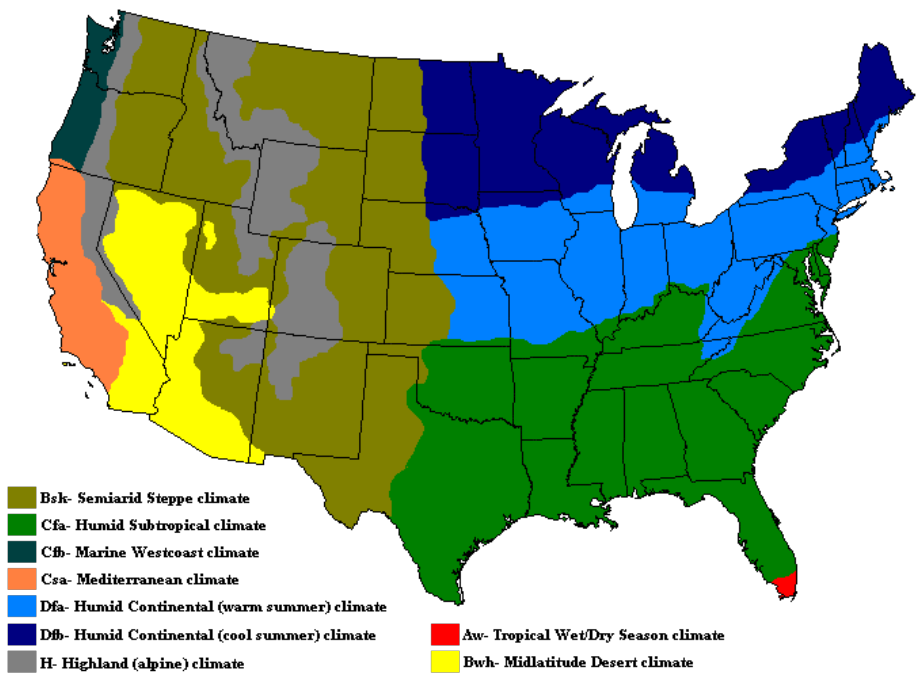
- 1. The HEPA Filter Book**
- 2. The Range Maintenance Book**
- 3. Range Ventilation As Your Competitive Advantage**

Copies Available On Request.

Q. Can I reduce Operating Costs by using 100% Outside Air with no recirculation?

A. There are locations in the country where purge systems with 100% outside air are the best design approach. We have used this in northern climates where the days over 90 degrees are limited. **We typically do not recommend this for cooling systems.** This approach requires larger cooling equipment, a greater initial cost and higher operation cost for the system during the heating and cooling seasons. Although there can be savings in the spring and fall using outside air, the higher heating and cooling expenses during the peak seasons usually cancel any potential savings. These statements assume that the NIOSH suggested 75 feet per minute design is the basis of design for the range.

Climate Zones of the Continental United States



Q. How much is added for Indirect Operating Costs?

- A. There is no consistent answer for this question. It will depend on the many options you will have for the operation of your range including the following:
- Will there be a range officer on the range when occupied by customers?
 - Will cleaning of the range be done by contractors or in-house employees?
 - Will filters be changed by in-house employees or contractors?
 - What is the management structure of your facility and what is the pay level?



Range Safety Officer is an essential personnel cost in most commercial ranges. He/she is classified as an Indirect Operating Cost.

We suggest that the direct costs be used for comparison when selecting your systems as the indirect costs will be consistent for any systems selected.

Q. Any more questions?

A. Call Carey's today at (708) 532-2449 for a free consultation.

Customized Air Handling for the Indoor Shooting Range



Since 1995, Carey's has completed hundreds of indoor range ventilation projects at facilities that have met and exceeded industry and military standards, including projects for the U.S. Navy, U.S. Air Force, U.S. Marshals, municipal police departments and commercial ranges.

Call Carey's today at 708-532-2449 for a free consultation.

Or visit www.CareysCentral.com.

© 2017 Carey's Small Arms Range Ventilation ("Carey's")

The materials made available in this booklet are presented as general information only and are not to be used for any commercial purpose. Carey's makes no representations about the suitability of the information contained in these materials for any particular purpose. All such materials are provided "AS IS" without warranty of any kind. Carey's hereby disclaims all warranties and conditions with regard to this information, including all warranties and conditions of merchantability, whether express, implied or statutory, fitness for a particular purpose, title and non-infringement. Carey's disclaims any duty to update these materials. In no event shall Carey's be liable for any special, indirect or consequential damages, or any damages whatsoever, resulting from, arising out of or in connection with the use or performance of materials hereby made available.

Carey's Small Arms Range Ventilation
Answers@CareysCentral.com ■ (708) 532-2449
8201 West 183rd St., Unit B, Tinley Park, IL 60487