



Final Report Rocky Flats Cold War Museum Scoping Study

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Executive Summary

The consulting team was led by Robert “Mac” West of Informal Learning Experiences, Washington, DC,, assisted by Dan Martin, Economics Research Associates, Chicago, IL, and Patrick Gallagher, Gallagher and Associates, Bethesda, MD. They devoted December 2002 through June 2003 to studying the current circumstances of the Rocky Flats Environmental Technology Site and the potential for the development of the Rocky Flats Cold War Museum as a means of ensuring the legacy of the cold war plant and interpreting the human, cultural and natural history and importance of the site and region in general.

- This study concludes that the concept of the Rocky Flats Cold War Museum is viable as a medium-sized significant museum.
- There is an expressed need for the memory of the events that occurred at Rocky Flats to be preserved in a way which is accessible and sensitive to the differing perspectives on its unresolved history.
- There is an expressed need to understand, appreciate, and use the natural setting of the future Rocky Flats National Wildlife Refuge. There is a strong desire for maintaining awareness of the environmental consequences of the Rocky Flats production facility.
- The economic and educational characteristics of metropolitan Denver area are positive for the success of the museum.
- The Rocky Flats Cold War Museum could attract an estimated annual attendance of between 88,000 and 110,000 and an estimated annual operating budget of between \$1,500,000 and \$2,000,000.
- The museum must be located close to the present Rocky Flats Environmental Technology Site for maximum impact. A location at or near current Buildings 60 and 61 is preferred. There are significant issues with this potential site, related to the availability of utilities and concerns about the retention of open space.
- Facility capital costs are estimated to range between \$6,000,000 and \$9,000,000, and exhibits an additional \$4,000,000.
- The museum will function best as an independent 501(c)3 organization, separate from but in partnership with the Department of Energy, Fish and Wildlife Service and other major stakeholders, with an active and committed board of directors and close involvement with the metro Denver community.
- The @20,000 square feet of exhibitions will be immersive, using diverse exhibition strategies, the developing collection of artifacts and the powerful oral histories currently being gathered. The museum also will feature changing exhibitions.
- In addition to its exhibition function, the museum may facilitate public access to the site monitoring process and to the documents defining and describing the history and operations of both production and cleanup. It also can be a much-needed public forum for ongoing study and discussion of all aspects of Rocky Flats.
- It is essential that the board be fully respectful of different points of view and be careful to include them in its discussions and work with the community and its contractors.
- An inclusive external advisory committee should be formed promptly to help guide project development.

Rocky Flats Cold War Museum

- The study proposes an aggressive development schedule, recommending that the museum open simultaneously with the completion of site cleanup in late 2006.

Acknowledgements

The report was prepared with the generous assistance of Rocky Flats Cold War Museum Director Steve Davis and Board President Ed Wolfrum, members of the Board of Directors, and numerous federal and local government officials, representatives of citizen groups, and interested individuals. ILE was hosted at three site visits – the National Atomic Museum, Bradbury Science Museum and, along with Board member Bryan Taylor, the Atomic Testing Museum.

Staffs of the three consulting firms, particularly Christen Runge of Informal Learning Experiences, made significant contributions to the research and the production of the report itself.

Financial support for this study was provided by a generous grant to the Rocky Flats Cold War Museum from Kaiser-Hill Company, LLC.

Introduction

The mission of the museum is to document the historical, social, environmental, and scientific aspects of Rocky Flats, and to educate the public about Rocky Flats, the Cold War, and their legacies through preservation of key artifacts and development of interpretive and educational programs.

– Board of Directors, October 26, 2002.

In December 2002, the Board of Directors of the Rocky Flats Cold War Museum (RFCWM) contracted with Informal Learning Experiences (ILE) to conduct a scoping, or feasibility, study for the proposed museum. The Board shared with the consulting team the results of its internal work to date, especially the results of the Fall 2002 Retreat. ILE was asked to assess the current circumstances and perceptions of the Rocky Flats Environmental Technology Site (RFETS), review the various possible approaches to interpreting the site and preserving memory of what it was in the past, suggest interpretive and operational strategies, and make recommendations to the Board of the feasibility of such a museum, its likely dimensions and activities, the likely cost, and a projection of how to move forward.

Scope of the Study

- Review existing reports and materials plus the preliminary work by the RFCWM Board
- Determine what kind of attraction the RFCWM can develop into
- Test community reaction and interest
- Place the RFCWM into regional and national attractions and economic contexts
- Develop exhibition, program and site plan and recommendations
- Explore partnering opportunities
- Suggest capital and operating proformas

ILE engaged the services of two sub-consultants, Economics Research Associates, Chicago, IL, and Gallagher and Associates, Bethesda, MD. Work commenced in December 2002 and continued through the spring of 2003. An interim report was given to the Board on April 16, at which time the Board suggested several matters for the consultant team to investigate prior to completion of the study. A first draft final report was provided to the Executive Committee on June 13. This document was prepared following an oral presentation on June 25 with subsequent Board review and comment.

Criteria for Success of the Rocky Flats Cold War Museum

Success of any public educational attraction, or museum, is dependent on fulfilling its mission (stated above) in an economically viable fashion. If only the first – the educational goal – is achieved, but economic viability is not reached, the institution will fail. Thus, no matter how elevated the educational goal, the institution will be feasible only if there are both substantial enough paying audiences/users to provide significant earned revenue and identifiable sources of contributed/unearned support to ensure a budget that is at least balanced. Further, in the case of a developing institution such as the RFCWM, initial capital resources adequate to bringing the museum into being must be available. Hence, this study examines both the stories and materials which anchor the educational mission and aspects of the location (specific site, regional and local demographics, experience of comparable institutions, the local non-profit landscape) which allow the feasibility to be estimated.

Procedure

The procedure followed during the study included a number of related elements. The project began with a review of formal and informal reports and literature about the defense-related history of the Rocky Flats Environmental Technology Site, its geology, natural and human history, the cleanup, and suggestions for post-cleanup management and use. ILE interviewed selected key leaders (many identified by the Board) in the areas of education, economic and regional development, tourism, arts and culture, government, and social services. ILE made or recalled site visits to museums and museum-like attractions in metropolitan Denver, as well as to three “nuclear museums”—the National Atomic Museum, Albuquerque, NM, the Bradbury Science Museum, Las Alamos, NM, and the Atomic Testing Museum (Nevada Test Site Historical Foundation), Las Vegas, NV. Nuclear museums, history museums, environmental/ ecological centers, and resource centers elsewhere as well as in the Denver area provided both program and economic comparables, and both positive and cautionary models. ILE participated in two escorted tours of the site, both the industrial area and the buffer zone. ILE attended two Fish and Wildlife Service (FWS) public meetings on their alternative Management Plans for the site as a National Wildlife Refuge and one open Rocky Flats Citizens Advisory Board (RFCAB) meeting. The study analyzed the demographics of metropolitan Denver and compared them with other regions of the U.S. ILE identified different opportunities for the interpretive program and content before settling on the one presented below. ILE developed and illustrated the schematic facility plan and exhibition approach. ILE identified several possible sites, and determined the positives and negatives of each. Capital and operating budgets were developed, tested against the results of the interviews, and compared with other similar-sized museums and industry standards.

It is important for readers of this report to understand both what it is and what it is not.

- It is an assessment of the magnitude of the operation the Rocky Flats Cold War Museum logically can become, the audiences it can serve, and its educational and social value.
- It is a draft program that meets the expressed needs and visions of many elements of the Denver community, from the many Rocky Flats stakeholders to the schools to the tourism industry to likely and potential partners.
- It is an analysis of the Denver area, and especially the northwest suburban marketplace with an eye toward an important niche that the RFCWM can fill.
- It is an indication of the responsibility of the Board of the RFCWM to successfully implement the museum concept as a dynamic and vital part of the evolving Denver metropolitan area.
- It is NOT a detailed “as-built” architectural or exhibition/activity program.
- It is NOT the final operating or capital budget—although the magnitudes of both are appropriate to the overall program.
- It is NOT a day-by-day schedule of fundraising and planning events—although it does outline the sequence of events and processes which must take place for a successful development of the Rocky Flats Cold War Museum.

Finally, this report, and the Rocky Flats Cold War Museum it envisions, provides the Board and other stakeholders in the RFCWM with the tools for moving the planning process forward within the context of a growing, changing and socially, educationally and economically vibrant northwest suburban Denver community.

Previous Work

There is an extraordinary amount of documentation of events and procedures at Rocky Flats. Literally millions of pages of documents are held in various federal and state repositories. Significant pieces of this are available as public documents published by the Department of Energy (DOE), the U.S. Fish and Wildlife Service (FWS), the several Rocky Flats contractors, state agencies including the Colorado Department of Public Health and Environment (CDPHE), the Colorado Natural Heritage Program and others. In addition there are numerous public documents generated as a result of a series of private suits against the Department of Energy and the contractors that operated the plant.

Two readily-available publications are useful in understanding the external perceptions of Rocky Flats: LeRoy Moore's advocacy publication, *A Citizen's Guide to Rocky Flats*, and Len Ackland's trade book, *Making a Real Killing: Rocky Flats and the Nuclear West*.

Since the early 1990s, DOE has provided regular and detailed documentation of the results of various industrial activities and the cleanup actions being taken as a result. Many of these are readily available from the Department at no cost.

The Colorado Department of Public Health and Environment (CDPHE) worked with a national panel of experts appointed by the governor, the Health Advisory Panel, to conduct an independent, nine-year study to estimate doses from contaminants released from Rocky Flats that may have impacted the health of people in surrounding communities. These findings are available on the CDPHE web site, at Rocky Flats Reading Rooms, public libraries, and in hard copy upon request.

As the DOE mission changed from production to cleanup, and as it became apparent that the industrial zone plus the buffer zone were going to assume different functions after completion of the cleanup, a series of studies by DOE, by the Colorado Natural Heritage Program, by citizen groups such as North Jefferson Area Group (NJAG), Rocky Flats Coalition of Local Governments (RFCLOG), and the Rocky Flats Citizens Advisory Board (RFCAB), and by the concerned governmental jurisdictions have defined and described the natural resource, cultural, archeological, historical and economic assets of the Rocky Flats Environmental Technology Site (RFETS) and, in many cases, have suggested management and use strategies.

The initiative that led to the formation of the Rocky Flats Cold War Museum and its incorporation as a 501(c)3 non-profit organization with a Board of Directors is a tangible result of previous work initiated by the City of Arvada, in partnership with other interested stakeholders. This non-profit museum was the beneficiary of a \$150,000 planning grant from Kaiser-Hill Company LLC, the lead contractor working on site cleanup operations. This scoping study was funded in large part by that grant.

Suffice it to say that the Museum project has the benefit of a huge amount of previous work, and will continue to be the beneficiary of the attention and guidance of an involved citizen Board, monitoring and stewardship activities, as well as future basic and applied research.

Interviews and Site Visits

The study involved an extended series of site visits and interviews throughout the region. Between December of 2002 and May of 2003, ILE met individually or in small groups with approximately 70 people with various interests in and concerns about Rocky Flats. These include members of the RFCWM board, DOE personnel, Kaiser-Hill personnel, representatives of city, county and state agencies, representatives of elected officials, the Rocky Flats Council of Local Governments (RFCLOG), the Rocky Flats Citizens Advisory Board (RFCAB), homesteaders (Rocky Flats retirees), media representatives, educators, members of public interest groups, and interested citizens. ILE attended meetings of RFCLOG and RFCAB and two Fish and Wildlife Service Management Plan open meetings. We made site visits to three western “atomic” museums in New Mexico and Nevada as well as to numerous sites and attractions in metropolitan Denver. Finally, ILE reviewed materials from additional regional site visits conducted recently while on other assignments.

The full list of contacts and visits is in Appendix 1.

Community Visions

The large majority of the people with whom ILE spoke have visions for significant interpretation of Rocky Flats both as the site of a nuclear weapons components production facility with all its ramifications, and as a remarkably preserved piece, but also at least in part contaminated, of open space with many natural assets intact because it was not involved in late 20th century suburbanization. FWS, in its currently preferred management plan, will create trails to provide access to much of the buffer zone and intends that there will be numerous opportunities for public recreational and educational use of the site. Decisions have yet to be made on this plan; RFCWM programming assumes that a public access trail system will be developed.

ILE’s research has shown that there is a broad range of opinion about what ultimately should happen with Rocky Flats, both the possibility of an interpretive facility with a broad mission, and the post-2006 management of most of the RFETS site by the U.S. Fish and Wildlife Service as a National Wildlife Refuge. An excellent way to review often-polarized public opinion, especially about access to, use of, and interpretation of the property, is to read the various written responses to the FWS management plan options that are posted on the FWS web site: <http://rockyflats.fws.gov/documents/Public%20Scoping%20Report%20Appendices%20B-D-E.pdf>.

An important observation is the need for the programs and exhibitions of the RFCWM to be balanced, and inclusive of all points of view expressed both by people employed within the Rocky Flats facility and those on the outside who were affected by and were sometimes strenuously critical toward what went on inside. This entails acknowledging the sincerity of the many individuals who have contributed to the rich—and as yet unresolved—20th and 21st century history of Rocky Flats.

There is strong encouragement from many stakeholders for the Rocky Flats Cold War Museum to be a forum for continued investigation into and free and open discussion of the causes and consequences of (especially) Cold War and cleanup events and activities. Many people see this as a primary mission for the museum. This mission could be accomplished through open discussions, formal academic seminars and workshops, guest speakers, research projects, and web-based interactive communications.

A further vision for the RFCWM is that it becomes a repository of basic information about the cleanup and all monitoring and long-term stewardship activities into the indefinite future to monitor the site post-closure and to contain contamination left on the site at closure. In some ways, this calls for the RFCWM to be a successor to (or at least complement) the several existing Rocky Flats Reading Rooms at Front Range Community College, at the Colorado Department of Public Health and Environment, at the USEPA on 18th Street in Denver, and at the CU-Boulder Library. The RFCWM can serve this function in a particularly strong way because it will be “where it all happened,” as well as provide access for observation of the ongoing monitoring activities of DOE and, perhaps, FWS.

A final vision is that the environmental and natural history interpretation of Rocky Flats be seamlessly integrated with the array of outdoor recreation and educational experiences along the Front Range. This involves not only connection with adjacent open spaces and the developing trail systems, the extent of which will be determined by the FWS and regional Open Space planners, but also appropriate use of Rocky Flats for environmental experiences which neither duplicate nor compete with those already in place. This latter vision necessitates that both the RFCWM and the FWS look closely at the truly unique and singular attributes of Rocky Flats and emphasize them, rather than developing more generic programs which could equally easily be done at Eldorado Canyon State Park, Sombbrero Marsh, Boulder Open Space and Mountain Parks, the Rocky Mountain Arsenal National Wildlife Refuge or Two Ponds National Wildlife Refuge.

Comparable Centers and Museums

ILE made three dedicated site visits to museums with a Cold War mission. Two have been in operation for many years—the National Atomic Museum in Albuquerque, NM, and the Bradbury Science Museum in Los Alamos, NM. The third, the Atomic Testing Museum, a program of the Nevada Test Site Historical Foundation, opens its Las Vegas, NV, facility in fall 2003.

Local comparable facilities are of two types. The Front Range is home to a remarkable set of federal research laboratories and consortia. These include the National Center for Atmospheric Research (NCAR) in Boulder, the National Renewable Energy Laboratory (NREL) in Golden, NREL's National Wind Technology Center (NWTC) at the northwest corner of the RFETS, the National Institute of Standards and Technology laboratory (NIST) in Boulder, The National Oceanographic and Atmospheric Administration in Boulder (NOAA), and the Integrated Teaching and Learning Laboratory (ITL) at Colorado University in Boulder. The laboratories of the Denver Federal Center are a short distance to the south.

The other array of regional facilities are more conventional museums and cultural centers—the Denver Museum of Nature and Science, the Colorado Historical Society's museum and historic sites, Colorado's Ocean Journey, and the Museo de las Americas, all in Denver, the Butterfly Pavilion in Westminster, a substantial number of local history museums in Longmont, Littleton, Lakewood, Aurora, Golden, and Boulder, the University of Colorado Museum and the Fisk Planetarium at CU in Boulder, and the Arvada Center for the Arts and Humanities. The region also supports several environmental and outdoor education centers—the Plains Conservation Center in Aurora, Sombbrero Marsh in Boulder, Two Ponds National Wildlife Refuge in Arvada, the Rocky Mountain Arsenal National Wildlife Refuge in Commerce City, and Eldorado Canyon State Park south of Boulder.

At the national level, additional comparables are the proliferating holocaust museums and others devoted to commemoration of unforgettable events, interpretive centers at other DOE cleanup sites, and several nascent independent museums.

These comparable agencies and organizations, many of which are profiled in Appendix 2, provide useful information, models, and, in some cases, warnings.

Observations

The nuclear museums represent three quite different funding and governance models. The Bradbury Science Museum is operated by Los Alamos National Laboratory, which limits its opportunities for creative programming, but also relieves it of fundraising responsibilities. The National Atomic Museum recently (post-9/11) relocated from the Kirtland Air Force Base to a temporary facility in downtown Albuquerque while its private foundation board raises the funds necessary to build a new, independent museum at the Albuquerque Balloon Park. Within a short time the National Atomic Museum will be fully separated from Sandia National Laboratory. The Atomic Testing Museum is housed in a building owned and operated by the University of Nevada's Desert Research Institute. Its operation is supported by a creative partnership of the Nevada Test Site History Foundation, the University of Nevada, and the Department of Energy.

The independence of the RFCWM from any Federal agency, while working in partnership with several of them, will provide it with an important programmatic independence. It also puts a significant responsibility on the RFCWM Board to be a politically sensitive, well connected, and effective advocate for the museum as well as a strong fundraising organization.

The national laboratories and NCAR have primary research missions; their limited public facilities are designed to inform the nation's taxpayers of the important scientific work they do. Their research focus along with their simultaneous need for public exposure are a clear opportunity for the RFCWM to provide integrated interpretive services along the proposed Tech Trail (described below, page 52).

The regional museums and cultural centers indicate the high priority the Denver region places on cultural and educational experiences. The notable recent fundraising efforts of the Denver Museum of Nature and Science (*Space Odyssey* project) and the Denver Art Museum (Daniel Libeskind addition) dramatically overshadow the bad decisions made by the board of Colorado's Ocean Journey. The success of the Arvada Center for the Arts and Humanities and Westminster's Butterfly Pavilion, plus the expansion of the Longmont Museum and Cultural Center are indication of the ability of the northwest suburbs to support vibrant cultural and educational organizations apart from the Denver city center.

There is a national trend demanding interpretation of decommissioned DOE weapons facilities. The already-functioning interpretive center at the Weldon Spring Site in Missouri, the dedication of a Mound Site (Ohio) building to the Mound Museum Association, and the great public interest in Fernald's (Ohio) Multi-Use Educational Center all suggest that the expectations for the RFCWM are consistent with this trend.

The Current Situation at Rocky Flats

Description

The Rocky Flats Environmental Technology Site is 16 miles northwest of downtown Denver, at the base of the Front Range. It was quite isolated from urban development when Rocky Flats was selected and acquired by the federal government in 1951 and expanded in 1974; it now is flanked on much of three sides by actual or potential residential/commercial developments. The Rocky Flats themselves are an extensive pediment extending east from the flatirons, likely some sort of a debris flow accounting for the unsorted sediment that makes the “rocky” in Rocky Flats. Prior to being purchased by the federal government as part of the Cold War initiative designed to produce nuclear weapons to deter Soviet aggression, the land was mined and ranched, industries that dominated this part of Colorado in the 19th and early 20th centuries. Before creation of the plant and development by DOE, Rocky Flats land was owned in large part by the Church and Lindsay families’ ranching interests.

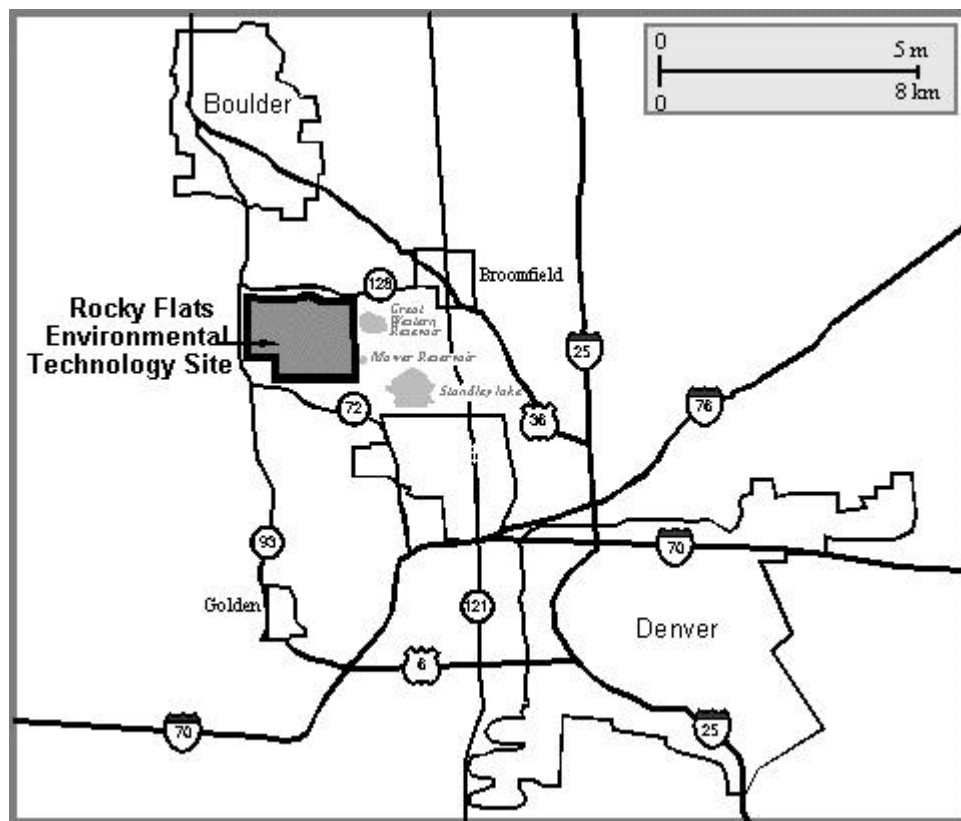


Figure 1. Location of Rocky Flats. Source: DOE

The western side of the RFETS is about three miles from the base of the Front Range. From an elevation of about 6,200 feet along Colorado Highway 93, the property slopes to the east; the eastern edge, at Indiana Street, is at an elevation of about 5,700 feet. This gentle slope provides for stunning views of the Denver skyline to the southeast from the vicinity of the current visitor center in Building 60.

The RFETS contains a mixture of prairie and foothills plant communities, ranging from dry (xeric) grasslands to wet meadows and small marshes. A 1996 study by the Colorado Natural Heritage Program concluded that the site contains highly significant natural elements important for the preservation of Colorado’s natural diversity. The 2001 Rock Creek Reserve Management Plan report reinforces this and is the basis for the current planning being done by FWS.



Figure 2. The Rock Creek drainage with its environmental diversity.
Source: DOE



Figure 3. Looking northwest toward the Front Range. Woman Creek is the drainage in the foreground.
Source: DOE

Humans have used the site for thousands of years. No significant archeological sites or artifacts have been located on the RFETS, but there may be some in close proximity. There are remains of historic uses of the region, the most prominent of which is the Lindsay Ranch.



Figure 4. Lindsay Ranch as it appears today. Source: DOE

Production

Between 1952 and 1989 Rocky Flats was a primary producer of nuclear weapons components fabricated from plutonium, uranium, beryllium stainless steel, and other materials. Its primary mission was the production of the fissionable plutonium pits for nuclear warheads and the recycling of old pits. (A plutonium pit is an atomic fission bomb like the one used at Nagasaki; a pit becomes a “trigger” if it is modified for use with deuterium and tritium to trigger the far more powerful fusion explosion of a hydrogen bomb. Both sorts of pits were made at Rocky Flats.)



Figure 5. The full development of the Rocky Flats Industrial Zone in 1988.
Source: DOE

Production ceased when the FBI and EPA raided the plant in 1989; President G.H.W. Bush terminated the weapons production mission in 1992.

Cleanup

Since 1992, Rocky Flats' mission has been cleanup and closure of this Superfund site. The intention is to remove all special nuclear materials and production-related wastes from the industrial site, to demolish all buildings, to identify and remediate all known dumps and contaminated areas, and to ensure that the contaminants left on site are contained and made inaccessible to future users of the site as per the requirements of the Rocky Flats Cleanup Agreement (RFCA). DOE also has the legal obligation to continuously and publicly monitor the site, especially areas of known contamination including the industrial site, such that the public will continually be apprised of the conditions of the site and in the event that any additional contaminants are introduced into the air or water.



Figure 6. Rocky Flats building being demolished after cleanup. Source: DOE.

Transfer

In accordance with the Rocky Flats National Wildlife Refuge Act of 2001, as of the final decontamination and decommissioning, Rocky Flats will be transferred to the U.S. Fish and Wildlife Service as the permanent land management agency, except for the more-contaminated property and facilities to be retained by the Department of Energy as required in Section 5(b) of the act (essentially the industrial zone).

The Fish and Wildlife Service is developing a 15-year management plan for the Rocky Flats National Wildlife Refuge. The new refuge will be operated together with the Rocky Mountain Arsenal National Wildlife Refuge northeast of Denver and Two Ponds National Wildlife Refuge in Arvada. FWS just completed (May 2003) its second set of open meetings at which it solicited community response and reaction to four management alternatives. The comment period for this stage of plan development closed June 20, and the verbatim comments will be posted on the FWS web site.

The FWS' currently preferred (but not yet confirmed) management plan builds upon the work done several years ago to define the Rock Creek Reserve (much of the northern part of the RFETS). It includes a modest trail system, interpretation of the natural assets of RFETS, including Lindsay Ranch, and is very complementary to the RFCWM program recommended in this report.

Local Neighbors and Landowners

Seven jurisdictions (Cities of Westminster, Arvada, and Boulder; Town of Superior; City and County of Broomfield; and Jefferson and Boulder Counties) joined together as the Rocky Flats Coalition of Local

Governments (RFCLOG) to oversee the cleanup and to ensure as far as possible results that are favorable to those communities. The Rocky Flats Cold War Museum is

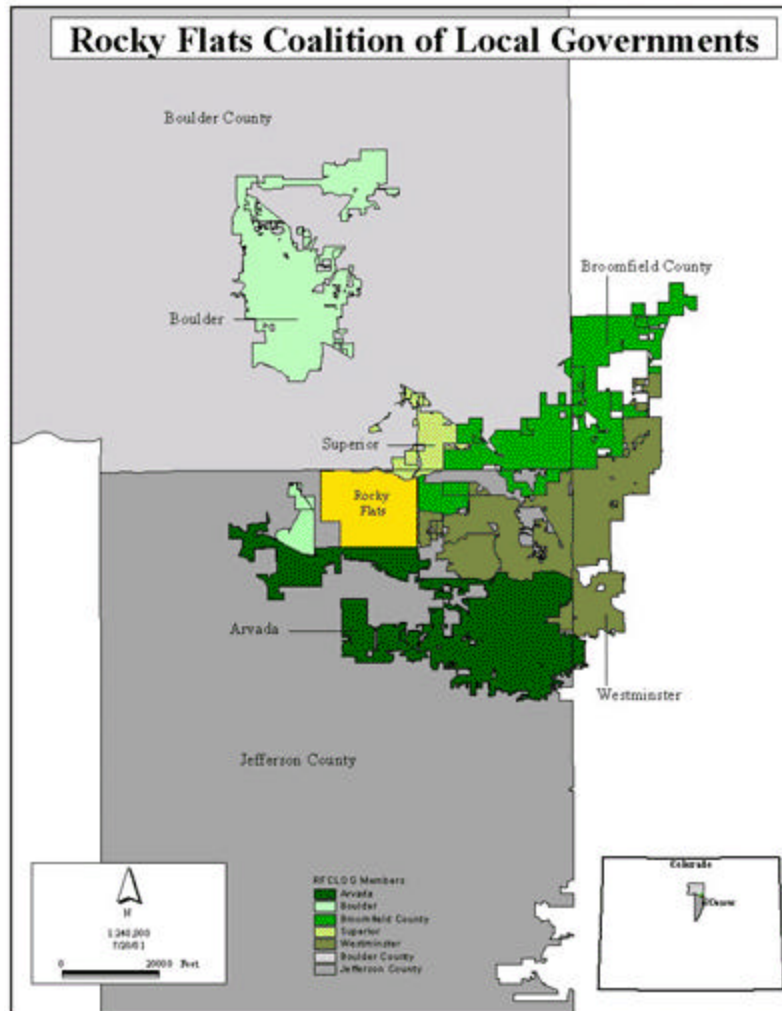


Figure 7. The seven jurisdictions that make up the Rocky Flats Coalition of Local Governments. Note the Boulder City property in Jefferson County. Source: RFCLOG

in close contact with RFCLOG as well as the Rocky Flats Citizens Advisory Board. The RFCAB was created in 1993 as a broadly representative body charged with advising DOE and the regulators on all aspects of cleanup at Rocky Flats; accordingly, when cleanup is completed according to the requirements of the Cleanup Agreement, the mission of the CAB will come to an end. Both organizations are very interested in the museum concept and hopeful that it will help visitors understand the concerns and issues of the neighbors.

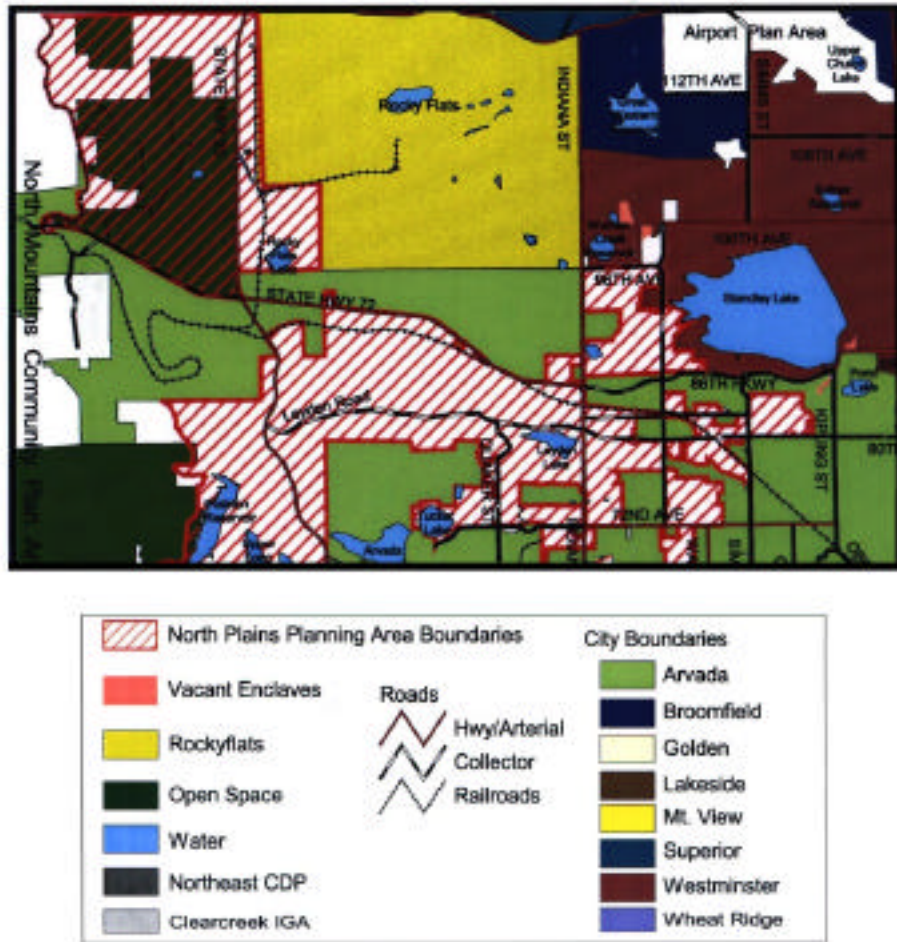


Figure 8. Jefferson County Draft Plan, North Plains Area. Source: Jefferson County Planning and Zoning

In addition to the RFCLOG membership, there is intense interest in Rocky Flats from Church Ranch (Charlie McKay, owner of a narrow strip of property to the west of the site as well as other property in the vicinity), the State Land Board of Colorado (owner of section 16 at the southwestern corner of the site), R A C Development Corp. (Ray Cheeney, owner of Buildings 60 and 61 and the property on which they sit), and Vauxmont Intermountain Communities (Bruce Nickerson, developer of the property immediately south of Rocky Flats, within the city limits of Arvada). Each has interests in what ultimately develops at Rocky Flats, what the access routes are (including the construction of the Jefferson Parkway) and whether and what services are extended to properties adjacent to Rocky Flats.

Beyond these interests, several tracts, both adjacent to the western boundary of Rocky Flats and in the western parts of Rocky Flats buffer zone, have mining licenses; several currently are active sources of aggregate. With several of these the Department of Energy owns the surface rights and other parties own the mining rights.

Yet other interested neighbors are the open space authorities of the RFCLOG communities. Their expressed concerns include issues of potential commercial development in the Highway 93 corridor, assurance that there will be adequate wildlife corridors between Rocky Flats and the foothills, and the ultimate design and placement of various trails and connections with any trails that may be designated on the Rocky Flats site.

After decommissioning is complete, the FWS will assume management responsibilities for the majority of the site. DOE will continue to have an important role—that of ongoing monitoring of the entire site. This is to ensure awareness of site conditions, especially those related to the security of the capped and remediated areas, the quality of the soils, air and water of the site, and reassuring the citizenry in keeping with the specifications of the Rocky Flats Cleanup Agreement and any future long-term stewardship agreements that Rocky Flats is not generating radioactive wastes (particularly plutonium) that threaten general health and safety.

The Region

Demographics

Colorado in general, and Denver and its northwestern suburbs in particular, demonstrate three characteristics which are favorable to the development of a cultural/educational attraction such as the Rocky Flats Cold War Museum. First, the population is neither exceptionally old nor exceptionally young. As shown in Fig. 9, the region exceeds the national average for residents ages 25-44, and on the whole is also slightly above the national average for residents 45 to 64 and 18 to 24. This speaks to a population of stable families and people in their prime working and revenue-generating years.

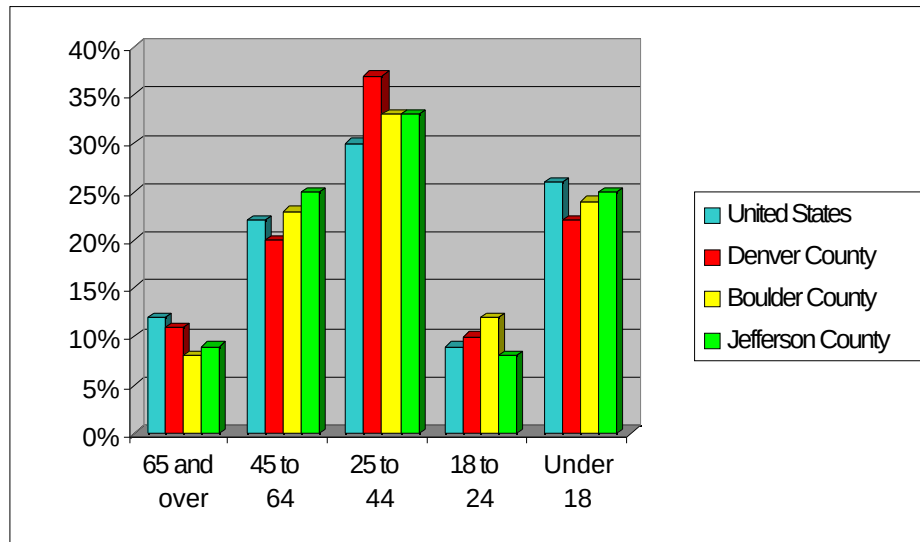


Figure 9. Percentage of residents of various ages. Source: U.S. Census

Of at least equal importance, the regional population is well educated. In looking at the educational achievement of the Denver-area population, the proportion of Boulder and Jefferson County residents with bachelor's or advanced degrees is much higher than the national average.

On a national scale, both Boulder and Jefferson counties rank extremely high in educational achievement levels, as shown in Fig. 10. This can readily be attributed to the presence of the University of Colorado at Boulder and the Colorado School of Mines in Golden, the several federal laboratories and independent research entities located along the Front Range, and the relatively high family income levels of the region.

Rank	County, State	Identity	Percentage
1	Fairfax, VA	Suburban DC	55.9
2	Montgomery, MD	Suburban DC	55.0
3	Boulder, CO	CU, Labs	52.4
4	Washtenaw, MI	Univ. Michigan	51.4
5	New York, NY	Manhattan	50.2
6	Chester, PA	S suburban Philadelphia	48.1
7	San Francisco, CA	City	47.3
8	Johnson, KS	W suburban Kansas City	46.3
9	Middlesex, MA	W and NW suburban Boston	46.2
10	Somerset, NJ	Princeton, Rutgers	46.1
...	...	...	...
33	Jefferson, CO	Labs, NW suburban Denver	37.7

Figure 10. Percentage of residents over age 25 with Bachelor's degrees. Source: U.S. Census

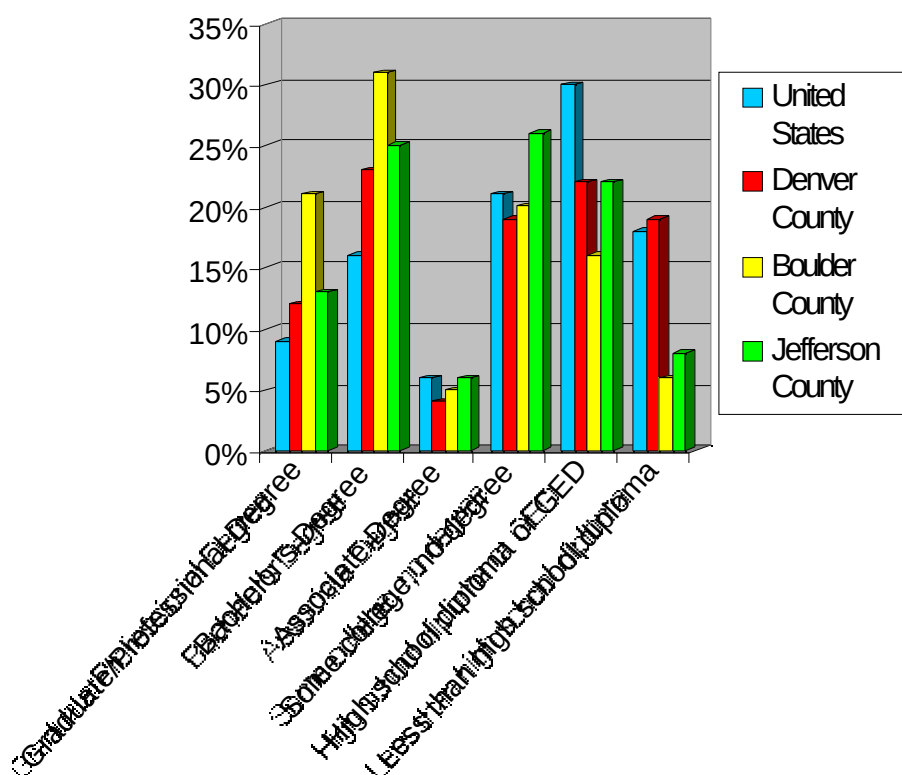


Figure 11. Percentages of residents over age 25 with various education levels. Source: US Census

County-by-county details on these educational statistics are provided in Appendix 3.

ILE and ERA have compiled statistics on population and income levels for the area presumed to be the core audiences for the Rocky Flats Cold War Museum. These data were compiled for concentric rings around a central point at the intersection of Church Ranch Road with US Highway 36 (Figure 11). The twenty-mile ring extends almost to DIA and includes most of metropolitan Denver. A significant component of this analysis is the number and proportion of families with annual household incomes of

\$75,000 and up—this number, coupled with the very high levels of education in the region, is an excellent predictor of attendance at cultural and educational attractions such as the Rocky Flats Cold War Museum.

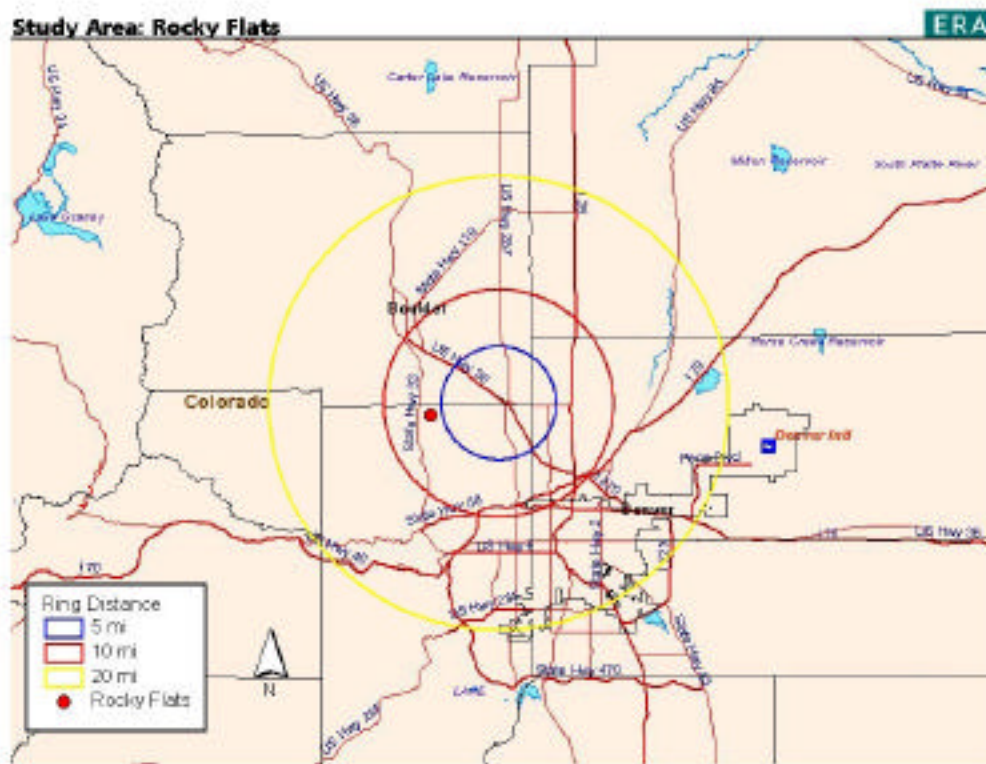


Figure 12. Five, ten and twenty mile radii around the intersection of US 36 and Church Ranch Road. Source: ERA

Rocky Flats Cold War Museum

	5 Miles	10 Miles	20 Miles
Total Population	154,179	479,752	1,152,615
Households	58,753	185,934	471,953
Median Household Income	\$66,162	\$57,483	\$48,391
Age Distribution			
0 to 9	22,241	66,366	148,273
10 to 19	23,048	67,002	145,022
20 to 29	21,358	75,517	206,261
30 to 39	25,329	71,815	172,409
40 to 49	27,805	74,430	168,661
50 to 59	19,303	58,005	138,987
60 and above	15,096	66,618	173,002
Household Income Distribution			
Less than \$19,999	4,990	25,112	93,380
\$20,000 to \$39,999	9,797	37,116	105,309
\$40,000 to \$59,000	11,484	36,744	89,809
\$60,000 to \$74,999	7,211	20,603	45,374
\$75,000 and above	25,272	66,359	138,082

Center of Ring: US 36 and Church Ranch Road
2006 projections; ESRI Business Information Solutions.

Figure 13. Projected 2006 populations and household incomes of 5, 10 and 20-mile radii from US 36 and Church Ranch Road. Sources: US Census, ESRI

The Denver Regional Council of Governments (DRCOG) currently estimates that most of the future growth of the metropolitan area—more than 100,000 new households—will be north of the city in the region generally bounded by I-76 on the southeast, 104th Street on the south, and US Highway 287 on the west. When and if the western beltway, the Jefferson Parkway, is completed, DRCOG projects the addition of a maximum of 15,000 households along and south of Colorado Highway 72. Thus, there will continue to be significant population growth within 20 miles of Rocky Flats.

Area Educational Attractions and Cultural Facilities

The appendices include profiles of the several Denver area educational attractions which have audiences broadly similar to those that are expected to be interested in attending the Rocky Flats Cold War Museum. These include: Denver Museum of Nature and Science, Colorado Historical Museum, Colorado's Ocean Journey, Butterfly Pavilion, Littleton Historical Museum, Longmont Museum, Boulder Historical Society, and others.

Despite the recent economic downturn, most of the Denver-area educational attractions and cultural facilities generally are doing well. The DMNS opened its \$50 million Space Odyssey, redesigned Gates Planetarium and Leprino Family Atrium on June 13, 2003; the Denver Zoo is proceeding with implementation of its \$100 million Master Plan; the Denver Art Museum is moving ahead with its \$100 million-plus Daniel Libeskind-designed addition and endowment enhancement. The Arvada Center for the Arts and Humanities is planning an expansion. While the Butterfly Pavilion's expansion has been delayed, the sad story of Colorado's Ocean Journey reflects more upon the poor judgment of its board and investors than on the ability of metro Denver to support quality cultural and educational attractions.

Since 1988 the Denver area has supported the Scientific and Cultural Facilities District funding program, which provides at least \$35 million in operating support annually. One-tenth of one per cent of the seven-county sales tax goes to support the region's cultural organizations. This means very substantial amounts of support for the four mega-institutions—the Denver Zoo, the Denver Museum of Nature and Science, the Denver Art Museum and the Denver Botanical Garden—all considered Tier One organizations. Tier Two and Tier Three organizations receive less money, but those grants nonetheless are very significant. The Rocky Flats Cold War Museum, even at this nascent stage of development, has been qualified by SCFD as a Tier Three organization within Jefferson County. This entitles it to a modest immediate

contribution to its operating budget; if it exceeds the Tier II thresholds for both attendance and operating budget, that amount will go up significantly, likely into the six-figure range.

Beyond its broad typical museum attractions, metro Denver offers an interesting array of visitor centers such as Celestial Seasonings in Boulder. In addition, there are various opportunities to explore the research endeavors of agencies and organizations such as the National Renewable Energy Laboratory's Visitor Center in Golden, NREL's National Wind Technology Center at the northwestern corner of Rocky Flats, the exhibition galleries of the National Center for Atmospheric Research in Boulder, the Integrated Teaching and Learning Laboratory at CU in Boulder, and informational displays at the National Institute for Standards and Technology in Boulder. (All of these research and laboratory facilities, and likely more, are potential programming partners for the Rocky Flats Cold War Museum.)

The Rocky Flats Cold War Museum can fill several roles. It will be the only place to focus on a distinctive feature of the contemporary and recent history of metropolitan Denver, complementing the more traditional offerings of the Colorado Historical Society and the new space technology interests of the Denver Museum of Nature and Science. In possible collaboration with the Fish and Wildlife Service it may be able to call attention to both threatened species (Preble's mountain jumping mouse) and sensitive and rare microhabitats and plant assemblages—providing insights into environmental management and stewardship generally unavailable elsewhere. Through its resource center and potential partnerships with DOE and the Colorado Department of Public Health and the Environment it could provide public access to monitoring and stewardship activities related to the conditions of the Rocky Flats site and longitudinal data on public health issues.

The Cold War/Nuclear Museum World

The Rocky Flats Cold War Museum will join a small but growing group of museums and interpretive sites that interpret aspects of the Cold War years. Several have large, broadly based presentations. These include an exhibit in progress at the National Museum of American History, a 400,000 square foot hangar opened in June 2003 at the Air Force Museum outside Dayton, OH, and a new exhibition at the Imperial War Museum, London, England.

Other Cold War presentations are location-based, and their stories concentrate on Cold War activities and events which occurred locally. These include the several museums that have been operation for many years—the National Atomic Museum, Albuquerque, NM, the Bradbury Science Museum, Los Alamos, NM, the American Museum of Science and Energy, Oak Ridge, TN, and the Columbia River Exhibition of History, Science and Technology (CREHST), Richland, WA. A fifth museum, the Atomic Testing Museum, will open in Las Vegas early in 2004. Both AMSE and CREHST have evolved well beyond their nuclear museum roots. AMSE is now in the process of being transferred to the city of Oak Ridge, and CREHST has been relocated from its original Hanford site and is programming as a conventional science center/regional museum.

In addition, since 1986 the Titan Missile Museum in Sahuarita, 25 miles south of Tucson, AZ, has operated in the only remaining intact Titan II silo; it is part of the Tucson-based Pima Air Museum. The National Park Service's Minuteman Missile National Historic Site is in southwestern South Dakota, adjacent to Badlands National Monument. It includes the Delta Nine missile silo and a launch control facility, and is expected to be open to the public in 2004.

A new cluster of museums/interpretive sites are being built as part of the remediation/cleanup of Cold War weapons design and production sites. One currently is in operation at the Weldon Spring Site outside St. Louis. Two others are in the planning stage in southwestern Ohio—the Mound Museum in Miamisburg and the Multi-Use Educational Center at the Fernald Site just northwest of Cincinnati.

The Washington,DC-based Atomic Heritage Foundation is developing traveling exhibitions detailing both historical and technological aspects of the Manhattan Project. Proposals from the Foundation currently are under consideration by the National Endowment for the Humanities and the National Science Foundation for 2,000 and 5,000 square foot exhibitions. If these projects are funded, the exhibits likely will be available in 2005 or 2006.

The International Spy Museum in Washington, DC, has significant exhibits devoted to Cold War espionage, some of which suggest that there continue to be vestiges of the Cold War (e.g., exhibits devoted to Russian spies Aldrich Ames and Robert Hansson).

Several Cold War military sites are under discussion for preservation. The Semi-Automatic Ground Environment Direction Center at Stewart International Airport in New Windsor, NY, is a 120,000 square foot windowless concrete cube from which, through the 1960s, housed the U.S. Air Force's first computer-based command and control system. Residents of New Paltz, NY, are seeking funding to conduct a feasibility study to turn it into a Cold War Museum. The Seneca Army Depot, located in upstate New York between Seneca and Cayuga Lakes, is a complex of 519 ammunition bunkers and other structures in the middle of a 7,500 acre Conservation Area. Seneca White Deer, Inc., a citizen organization, seeks to convert it into a Cold War museum with a major environmental conservation area.

On the international front, both Canada and Russia have cold war museums. The Diefenbunker, a National Historic Site and Canada's Cold War Museum is located outside Ottawa. It is a 100,000 square foot, four-story, underground structure that would have housed the Canadian government in the event of all-out atomic war. Much has been restored and a variety of exhibitions are in place. The name refers to Canada's Cold War Prime Minister, John Diefenbaker. Moscow is home to the KGB Museum which displays a collection of spy memorabilia including captured U.S. equipment.

In addition, Francis Gary Powers, Jr., son of the U2 pilot shot down over the former Soviet Union, continues to pursue his dream of "The" Cold War Museum located in metropolitan Washington, DC. His

efforts have succeeded in gaining an affiliation with the Smithsonian Institution, modest grants from the Commonwealth of Virginia and Springfield, VA, VFW Post 7327, and some interest in locating the museum at a former Nike missile base in Lorton, VA. His traveling exhibition on the U-2 incident will be at the Atomic Testing Museum in fall 2003, prior to the opening of its formal exhibits. The formal mission statement, taken from the Cold War Museum's web site is: "The Cold War Museum is a 501.c.3 charitable organization dedicated to education, preservation, and research on the global, ideological, and political confrontations between East and West from the end of World War II to the dissolution of the Soviet Union."

Site Requirements and Options

Requirements

The Rocky Flats Cold War Museum should be located as close to the Rocky Flats Environmental Technology Site as possible. There is general agreement that proximity is essential to the success of the museum; the impact on museum visitors to be able to look across the landscape and say, “right there is THE PLACE” is indeed powerful.

The RFETS is, for all practical purposes, the “icon” artifact for the RFCWM, that singular thing which gives the museum its significance and makes it a “must-go” place. The consulting team believes that a site remote from RFETS will not attract the attendance (either numbers or breadth) necessary to support the educational programs and mission of the museum. A remote location (even if only a few miles from the RFETS) will have neither the emotional impact nor the ability to deliver a broad experience including direct contact with the natural environment of Rocky Flats.

Beyond that, it is important that the viewscape be as broad as possible, enabling visitors to put the Rocky Flats industrial zone in the context of its relationship to downtown Denver, the Front Range, the natural environment, and the prevailing wind direction and topographic slope.

There are two aspects of access to the site: proximity to a major highway for vehicular access, and proximity to the primary area likely to be interpreted by the Fish and Wildlife Service in the northwestern part of the refuge. The closer the museum facility is to that interpreted area, the easier it will be to seamlessly blend the indoor and outdoor experiences and the staff(s) who manage them.

Options

Three options are under consideration, presented here with the advantages and disadvantages of each.

I. Buildings 60 and 61, the current visitor center and Kaiser-Hill offices and the adjacent warehouse, at the west entrance to the RFETS.

The most economical option is to repurpose one or both of these buildings for use by the museum, with office and program spaces made available to FWS and DOE (and perhaps other partners/tenants). These buildings were constructed in 1988, and will be available toward the end of the cleanup. RAC Development’s current Kaiser Hill lease expires in mid-2005; the owner has indicated an openness to working with the museum regarding reuse and reconfiguration of either or both buildings. New building construction will be significantly more expensive, at least initially, than repurposing existing structures.



Figure 14. Building 60, which houses the current Visitor Center. ILE photo.



Figure 15. Building 61, the warehouse. ILE photo.

Advantages

- The location provides the best possible view of the site, including both the industrial zone and the Denver skyline in a single vista.
- The buildings and surface parking already are there, requiring only modification for re-use as a museum and its support facilities.
- Lindsay Ranch and the Rock Creek Reserve are close, within walking distance for many people, and linked by a gravel road and pedestrian trail in three of the four FWS alternative management plans.
- Taken together, the two buildings provide much more space than current estimates call for.
- There will be limited uses for these buildings after the plant closure is completed, so a favorable purchase or lease agreement is possible.
- An 18-month renovation and installation period (mid-2005 to late 2006) is adequate for preparing the museum to open.

Disadvantages

- The buildings are architecturally undistinguished, and either may pose unrecognized repurposing problems.
- As the plant is decommissioned, it will stop providing water to both buildings.
- Alternative water sources would be either trucking water to the location (see NWTC below) or a new line extending northward from Arvada (as an out-of-city utility contract or other resolution to the existing utility contract between DOE and RAC Development); the second alternative requires deep investigation.

The American Association of Museums estimates that renovating an existing building for museum purposes averages about \$75 - \$100 per square foot. That suggests a cost for renovating Building 60 at \$2,325,000 to \$3,100,000. Building 61 would require less demolition during a renovation, but substantial infrastructure would have to be added; at \$100 per square foot, it would cost up to \$4,500,000 to renovate.

Use of either or both buildings will require either purchase or lease from RAC Development Corporation (Ray Cheeney). The property has recently been for sale for an advertised price of \$4.2 million, with little or no apparent interest. Cheeney has informed ILE that Building 60 is leased at \$35,515 monthly, and Building 61 at \$21,000 monthly. Of these figures, the average monthly utilities (light and power) costs for Building 60 is \$3,100 and \$1,160 for Building 61. These rental and sale prices are artificially skewed by the large federal and contractor presence currently required; when the federal presence diminishes, they should be reduced to figures more in keeping with the northwest suburban market, especially given their isolation for commercial use.

II. National Wind Technology Center

The NWTC was carved out of the northwest corner of the Rocky Flats buffer zone in 1977. Although it is a Department of Energy facility, it is operated completely independently of the RFETS. There is a several-acre flat tract of land south of Colorado 128 at the entrance to and outside the security perimeter of the NWTC site that is a logical second choice for the RFCWM site. That tract is partly on NWTC land and partly on the northern edge of the Refuge.



Figure 16. Entrance to National Wind Technology Center. ILE photo



Figure 17. View looking south from entrance to National Wind Technology Center. Upper Rock Creek is the dark vegetation in the foreground. ILE photo.



Figure 18. View looking southeast across potential site for RFCWM at the entrance to the National Wind Technology Center. The Rock Creek drainage is marked by the line of dark vegetation. ILE photo.

Advantages

- New construction would permit a purpose-built museum building, which could have a desirable space configuration, architectural distinctiveness, and vistas of the industrial site with upper Rock Creek in the foreground.
- There is easy access from Colorado 128.
- The location is reasonably close to US 36, Flatirons Mall and Interlocken.
- The Museum could become the interpretive center for the NWTC, adding another program element and serving another partner.
- Lindsay Ranch, while not visible, is very close, so interpretation of the Rock Creek Reserve would be facilitated.

Disadvantages

- This location is distant from Arvada and thus likely to lack support from that city.
- While reasonably close to US 36, it is distant from the most developed residential areas in the northwest suburbs.
- This site would require new construction, more expensive than renovating an existing building. However, the ability to design to the museum's functions might more than compensate for the cost.
- The viewscape does not include the Denver skyline.
- Water is not available, and is even less likely to become directly available than at Buildings 60 and 61.
- The most desirable property includes Refuge land.
- This property is currently owned/managed by two government agencies; the time required for land transfer/lease and/or NEPA approval may cause delays to construction.

The American Association of Museums estimates new museum construction to cost \$200 to \$250 per square foot (some estimates go over \$300 per square foot). If a 30,000 square foot building were built, it therefore would cost between \$6,200,000 and \$7,750,000.

The U.S. Green Building Council has created a comprehensive checklist for addressing sustainable design issues in the Leadership in Energy and Environmental Design (LEED) Green Building Rating System. There are cost premiums associated with environmentally responsible building systems, some of which may be offset by tax credit and tax incentive programs. There also are substantial downstream benefits in reduced operating costs and increased productivity.

Note about water service: The National Wind Technology Center does not have a water line. Rather, it purchases water by the truckload from a service in Boulder. While the actual purchase is at a modest cost (\$70 per week), the NWTC must have storage capacity on site for a volume of water adequate for fire suppression as well as for daily uses. This is a significant capital cost. Such a water acquisition strategy would be necessary for a RFCWM facility at the entrance to NWTC; it also could be used at the Building 60 and 61 location.

III. Vauxmont

ILE has met with Bruce Nickerson, Vice President and General Manager of Vauxmont Intermountain Communities. The proposed Vauxmont development extends along the entire southern side of the Refuge, already has been annexed into the City of Arvada, and will be serviced by the city. Nickerson is willing to consider having the RFCWM located on Vauxmont, and recommends a location close to the intersection of highways 93 and 72, at the west end of the development. He is amenable to working out a partial donation/partial purchase or lease arrangement.

Advantages

- Potential sites on Vauxmont are adjacent to the Refuge.
- New construction will be required, which could have a desirable space configuration and architectural distinctiveness.
- The location would be accessible from both Colorado 93 and Colorado 72.
- The location might be close to a Jefferson Parkway interchange.

Disadvantages

- There is no view of the industrial zone.
- The location is very inconvenient for access to the Rock Creek Reserve and Lindsay Ranch.
- This location is dependent on the rate at which Vauxmont develops, which is dependent on the ultimate location and construction of the Jefferson Parkway and the availability of additional water supplies to allow the entire development plan to be completed.
- Developing the museum on Vauxmont would require an interim facility elsewhere.

It is unlikely that all three potential sites will be available in time for the suggested December 2006 opening (which loses its importance if the closure is accelerated). Assuming that Kaiser Hill leaves at the end of its lease, there is adequate time for the renovation of 60/61 and the installation of exhibits between mid-2005 and late 2006. This adds to the desirability of the current visitor center site.

If the Building 60/61 site is not available or is deemed unacceptable for other reasons, the consultants' next preference is the entry to the NWTC. However, that site depends upon agreement between DOE and FWS for use of the property, followed by an environmental impact study; only after that could construction begin. Furthermore, there are indications that Arvada would not support this particular site regardless of the timing.

A site at Vauxmont is the third choice for strong programmatic reasons – poor view of the RFETS and distance from the proposed FWS interpretive areas. In addition, its development would depend on the virtual completion of the Vauxmont development, which probably will not be until well after 2006.

Interim Site

While an interim site is not optimal, uncertainties regarding fundraising and facility development occasionally necessitate a temporary location - especially for new museums. In most instances, interim sites are disused public facilities (e.g., schools, transportation centers, etc.) or vacant commercial facilities. These typically are very near where the museum wishes to locate permanently, thereby becoming vehicles for marketing the museum's concept and capital campaign while at the same time developing its audience and testing its programs.

In the case of the RFCWM, an interim site near the preferred final site is not possible. One distant from the final location (assuming the final location is at or near the Building 60/61 location) or otherwise

proximate to the RFETS, is problematic for the same reasons as a permanent location removed from the RFETS.

Highway access

All three sites currently are accessed from two-lane state highways. The NWTC site is the closest to US 36, the primary NW-SE corridor, via Colorado 128. Access to both the Building 60/61 site and the Vauxmont site requires longer drives on two-lane highways, and Colorado 93, the only access to Building 60/61, is notorious for bad winter driving conditions.

The completion of the Jefferson Parkway, from US 36 in Broomfield to C-470 in or near Golden is likely by 2010 (according to DRCOG, Jefferson County, and local landowners/ developers). After many years of discussion, most of the routing is agreed upon; only the connection with I-470 in or near Golden remains in dispute. This highway will create interstate highway access to within no more than five miles of any of the proposed RFCWM sites, making the museum site much easier to reach from the southern and eastern parts of the metropolitan area than it is currently.

Rocky Flats Cold War Museum Functions and Facility Needs

The RFCWM is expected to perform the typical array of museum functions—public exhibitions, focused school programs, volunteer opportunities, life-long learning programs, special events and community outreach. In addition, there will be special functions related to the unusual circumstances of Rocky Flats including public and academic forums discussing the meaning and developing history of Rocky Flats. Also, pending discussions with DOE and FWS, the museum may provide public access to ongoing stewardship and longitudinal records of various monitoring programs, and programmatic coordination with at least those two and possibly more federal agencies and consortia. Some of these latter functions are not going to produce significant revenues, and are expensive in terms of both dedicated staff and space. Others (those which allow other agencies to better interact with the tax-paying public), may well generate significant income. Until their magnitude is better understood, they cannot be factored into the expense budget developed later in this report.

The core of any museum experience is the exhibitions. The complex and interlocking stories of Rocky Flats will be developed through about 20,000 square feet of state-of-the art exhibitions. This exhibition space is defined by the richness and complexity of the Rocky Flats stories. The exhibits will use a creative mixture of actual and replica artifacts and natural specimens, reconstructed immersive environments, interactive models, and abundant first-person narrative, much of which will be drawn from the oral histories currently being gathered. Approximately 2,000 square feet of the exhibition area will be devoted to temporary shows. It is anticipated that the various organizations interpreting the Cold War and the Manhattan Project will jointly produce exhibitions which can be rotated among them; the Atomic Heritage Foundation's exhibitions also may be available.

The exhibitions in the museum building may in part be preparation for the proposed outdoor experience of the Refuge. The intensity and magnitude of that experience will not be determined until the FWS CCP is completed and approved. However, the museum experience should be further developed in anticipation of a broad array of opportunities to both see the site, including a view of the Industrial Zone, and access the trails that may be created by the FWS. Some of the indoor exhibitions therefore should be developed jointly by the museum and the FWS, and museum staff may well provide interpretive services to the FWS.

The RFCWM is ideally positioned to provide the neutral forum for ongoing discussion of the meaning and impact of Rocky Flats. In this way, it will be in the vanguard of 21st Century museums in its ability to engage audiences in serious and introspective activities, much of which is driven by the particular needs and concerns of special groups of participants (see articles in *Daedalus*, Summer 1999). In order to do this effectively, space will be devoted to multipurpose and conference rooms, with easy access to the internet and the museum's resource center.

The museum will have a modest but significant three-dimensional, plant-derived artifact collection; it also can develop (and is currently in the initial stages of doing so) an impressive array of photographic, paper and electronic records of activities at and about Rocky Flats, Cold War documentation, films and videos, and general ephemera and commercial products representative of the Cold War era. Some of those resources currently reside in the several Rocky Flats Reading Rooms; some are in private collections which, when the museum has both a public presence and an established collecting policy, will be donated or offered for purchase. Current estimates are that the resource collection itself will require several thousand square feet, much of that accessible to the public. Other collection requirements are unknown at this time.

As is the case with conventional museums, the RFCWM will offer structured programs for grade-specific school groups. This will require that some spaces be available for group usage—coat rooms, restroom facilities adequate for group use—and that there be large enough areas within the exhibits for a class-sized group to comfortably convene. The spaces allocated for the forum activities will also be appropriate for school group use on weekdays.

On weekends, late afternoons, school holidays, and evenings the museum will be available for lifelong learning activities. These can be adult programming sponsored by the local colleges and universities, multi-generational activities for extended families, public lectures, and so on. Once again, the facilities developed for the forum function will be used.

The topics addressed in both the school-based and adult/lifelong/multi-generational programs can be as varied as all those addressed in the exhibitions and the Refuge interpretation; in addition, these programs allow exploration of issues and ideas which are only tangential to the immediate messages of the museum.

The museum's facilities will be a modest source of revenue when they are used for the above purposes, as well as for business and social events.

Another special—and potentially important—function of the RFCWM may be public access to the monitoring and long-term stewardship activities of the Rocky Flats site. Either within the flow of the exhibits, or set up as a modest dedicated space, the museum could facilitate citizen observation of monitoring procedures, the data being received—both real-time and aggregated and interpreted—and, in the resource collection, access to longitudinal records (those gathered over extended periods of time). These potential functions will have to be carefully coordinated with the DOE and the CDPHE, and could be very valuable to the agendas of both agencies. In addition, FWS monitoring and documentation of the environments, habitats, and flora and fauna of the Refuge may be accessed here.

There may be opportunities for the museum to host academic research. The resource library and collection will be available to researchers, and the museum may become a “base station” for students and professionals with interests in the natural assets of the Refuge as well. There should be space available for such guest researchers in the resource collection. This latter could be another good link between the museum and the FWS. The Museum could host presentations by researchers studying any aspect of Rocky Flats in which they inform the broad public of the results of their research and encourage potential public participation in that research.

Collections and Exhibition Materials

The nature of the Rocky Flats Environmental Technology Site is such that the RFCWM will have modest amounts of material rescued from the site to use for display. The contamination of virtually all the buildings, coupled with the decontamination process, mitigates against there being large amounts of actual plant material salvaged for use by the museum. However, the collection could grow through the gathering of items related to the nuclear weapons industry, Cold War social history, and Cold War era popular culture. In addition, exhibits devoted to the natural environment and human history of Rocky Flats may have a variety of actual specimens.

The Museum has succeeded in acquiring “typical” materials (e.g., glove boxes, protective suits, demonstration materials) from uncontaminated parts of the site that serve very well to demonstrate what went on inside the contaminated facilities now being taken down. The current visitor center in Building 60 displays a small array of the objects which are available for the RFCWM exhibits. These will be important in exhibits devoted to reproducing the environment of the plutonium-pit production, as well as the post-closedown cleanup. In addition, the Museum Board’s Collections Committee has accumulated a large amount of paper and film ephemera, including personal items related to the cleanup; this is only now being indexed and catalogued. Nonetheless, there is a significant number of interesting documents, images and artifacts for use in the exhibits.



Figure 19. Demonstration glovebox, on display at Building 60 Visitors Center. ILE photo.



Figure 20. Protective suits, on display at Building 60 Visitors Center. ILE photo.



Figure 21. Decontamination and removal technology, on display at the Building 60 Visitors Center. ILE photo.

Of extraordinary importance is the oral history project under way by the Oral Histories Committee including Dorothy Ciarlo's work at the Carnegie Library in Boulder, and interviews inside the facility conducted by Don Rohlf and others of Kaiser Hill. LeRoy Moore and Robert Del Tredici also have done 25 audio interviews with activists, workers, and others who played prominent roles in the unfolding history of Rocky Flats. To date, well over 80 interviews have been audio- or videotaped with individuals who had various associations with Rocky Flats—employees, observers, and activists. All of these recordings are a vital source of first-person narratives to illuminate the exhibits and to personalize Rocky Flats for those who had no association with it in the past. About 240 additional interviews are planned; it is certain that many of them can add substantially to the intellectual base of the museum's exhibits and programs. These personal recollections illustrate the diverse viewpoints, attitudes and activities which caused intense controversies both during and after the plant's operation. Efforts have been made to formally collaborate with the Carnegie Library, which is digitizing its interviews, in order to maximize the impact of this resource.

The Exhibition Experience

The signature experience of any museum visit is the exhibitions. The exhibition program of the Rocky Flats Cold War Museum will be divided into two unequal parts. The primary experience will be with the permanent/long-term exhibitions, and the secondary will be with the changing exhibitions.

The bubble diagram that follows, and the three renderings of possible exhibitions, give an idea of what the prospective museum might look like. Readers should keep in mind that these remain hypotheticals; the final exhibition flow and feel might well wind up looking and being organized quite different from this.

The diagram gives not only recommended program and concept physical adjacencies, but also suggests how traffic might flow and how various services and experiences might be encountered and arranged. As mentioned at the beginning of this report, there is no expectation that the feasibility study will provide “The” complete planning document for the museum. Many of the details remain for the master plan and subsequent internal work.

In general, the primary exhibition experience is divided into three parts. Each has a long-term history, a Cold War history, and an environmental aspect. The strong intention is to immerse visitors in the complexities of Rocky Flats, to show the multiple interplays between and among the weapons production plant, the external social and environmental world, the various physical, geological and ecological environments within which the Rocky Flats plant was situated, and the forward-looking communities (both regional and intellectual) which now surround and influence the future of the former weapons production site and its buffer zone.

The initially proposed exhibition opens with the BIG question of Why Was the Plant Put at Rocky Flats? This opens a discussion of the post World War II geopolitical world, the policies of the Truman and Eisenhower administrations, and the argument made for Rocky Flats on the bases of geography, geology, workforce availability, and political influence. This section of the exhibition includes a walk-through scale model of the plant, filled with graphical and computer-based interpretations and explanations of the specific activities which occurred throughout the site.

The second major exhibition element focuses on the actual production line and activities within the plant. This brings visitors face-to-face with not only the employees but also those who were, for political and public health reasons, watching the plant from a distance. Individuals’ experiences and emotions will be accessed through the collection of oral histories.

This is followed by a section which demonstrates the political and social environment of the 1970s and 1980s, including the anti-war movement as well as the civil rights, feminist and environmental movements. Many events at Rocky Flats fit well into this larger picture. In some respects, the climax of the Rocky Flats story is reached in 1989 when first, the FBI and EPA raided the facility to collect evidence of violation of federal environmental laws and second, when in November production was temporarily halted to correct the problems that had led to the FBI raid. Efforts over the next two years to resume production failed, until the de facto shutdown became official and permanent.

Meanwhile and simultaneously, external history stepped in again—the Berlin Wall falls, the “Evil Empire” is shown to be a hollow shell, and the Cold War cools abruptly. When in 1992 President George H. W. Bush declares the nuclear age over and officially terminates nuclear weapons production at Rocky Flats and changes its mission, the facility becomes quite a different creature. Recent decisions regarding new additions to the U.S. nuclear capability suggest that this exhibit area should be quite flexible.

The next episode for Rocky Flats, and for the Museum, is an area devoted to the technology of the cleanup, to the huge areas of the RFETS which have not been affected by the plant, and to the ongoing dialogue among and between those who have varying perspectives on Rocky Flats. This is perhaps the most important function of the museum—being that neutral/common forum within which a spectrum of activities can occur—from formal, academic presentations to open and vigorous community discussions, debates, and advocacy events.

The changing exhibitions gallery, adjacent to the permanent exhibitions, will feature traveling exhibits, including shows shared with the other nuclear museums, as well as exhibitions pertaining to the history and technology of the cold war and the Front Range region. Partner organizations may also be featured in temporary exhibitions. These changing exhibitions will be an excellent reason for repeat visitation to the RFCWM.

From the museum proper, visitors may proceed to the outdoor experiences which are devoted to interpretation of the history and natural history/environment of the Refuge and adjacent areas. They also may go into the Resource Center to examine the collection of Rocky Flats documents, to talk with researchers, or to affirm, assess, and inspect the cleanup process and ongoing stewardship of the site.

Rocky Flats Cold War Museum

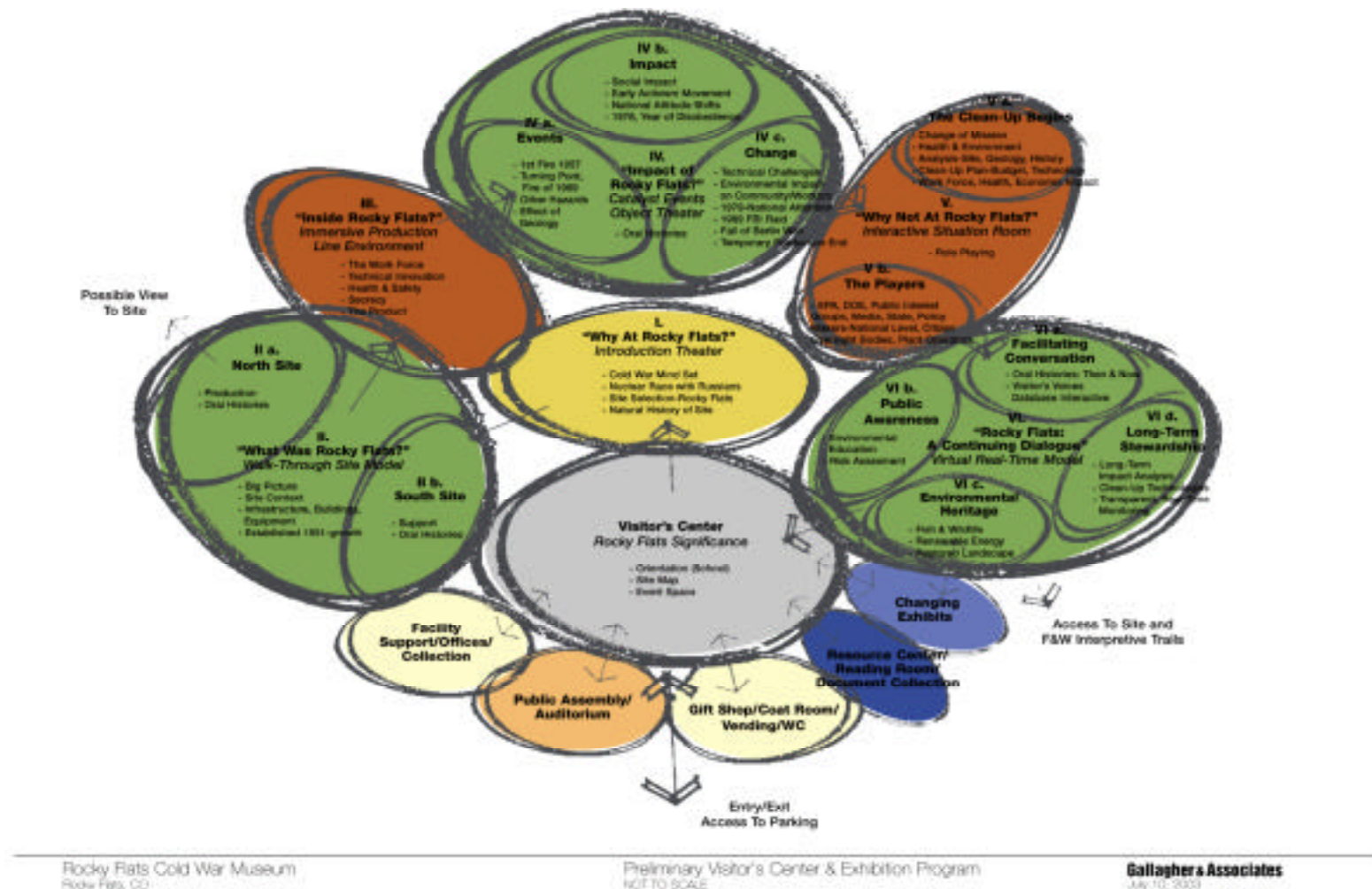


Figure 22. Content and physical relationships

Rocky Flats Cold War Museum



Rocky Flats Cold War Museum
Rocky Flats, CO

What Was Rocky Flats?
Walk-Through Interactive Site Model

Gallagher & Associates
June 15, 2003

Figure 23. What Was At Rocky Flats



- Immersive Production Line, White Glove Interactive
- Clean Suit Interactive, the visitor can step into a section of a clean suit

Rocky Flats Cold War Museum
Rocky Flats, CO

Inside Rocky Flats
Immersive Production Line Experience

Gallagher & Associates
June 15, 2009

Figure 24. Inside Rocky Flats



Virtual Real-Time Model

Real-Time Transparent Monitoring provides an uncensored view of the current site

Visitor's Voices Database Interactive allows visitors to leave their comments

Rocky Flats Cold War Museum
Rocky Flats, CO

Environmental Legacy
Virtual Real-Time Model Experience

Gallagher & Associates
June 13, 2003

Figure 25. Environmental Legacy

In addition to the formal exhibitions, the Rocky Flats story will be available through docent-guided tours, structured programs for school and other organized groups, formal presentations by researchers and advocacy groups, and special events centered on remembrance of specific events, theme days, or national holidays.

As the program masterplan is developed, certain aspects of the Rocky Flats story will be found to lend themselves especially well to the exhibition format, while others will best be dealt with through various media, focused discussions, or printed materials.

Program Requirements

Site Access and Parking

In addition to the desired proximity to a major highway (in the case of the RFCWM all potential sites are accessed by two-lane state highways), the site must contain adequate space for both private vehicle and school bus/motorcoach parking. There are Jefferson County zoning regulations which govern the number of spaces that must be available based on either annual public attendance or design day attendance. Staff parking is additional.

Lobbies/Public Amenities

The museum lobby includes all admissions functions, immediate access to school group orientation and cloakroom facilities, access to the gift shop, an information desk, public restrooms, and a small orientation area. Comfortable seating should be scattered throughout the public spaces. A small vending area will provide simple snacks and drinks.

Exhibitions (Permanent and Changing)

This approximately 20,000-square-foot area is immediately visible from the lobby and has a clear entrance pathway. Within the exhibits are spaces for school and other group assembly as well as access to materials and supplies required by educators and interpreters. The temporary exhibition space can be isolated from other exhibition areas during exhibit setup and takedown; further, it is readily accessible from a loading dock area.

A public assembly/auditorium facility is part of the entry experience. This is accessible when the exhibitions are not open, and has full access to restroom and cloakroom facilities. It should have seating for 200, and full projection and presentation facilities, including internet access.

Collections management and technical support areas are separate from the public areas and may, in fact, be located partly or completely off-site or in another building. These facilities must have full climate controls, high security and limited access.

Administrative offices include areas for senior staff as well as common computer, copying, break, and volunteer lounge spaces. There may also be need for offices for FWS and DOE staff; if they are not here, they will be located in close conjunction with education and/or resource center offices.

Educational facilities include spaces for forums, classes, lectures, and other public programs which best take place away from the exhibits, as well as offices, preparation spaces, and storage for the museum's programmers.

While the museum should not fabricate its exhibits on-site (it will be less expensive to contract specialized fabricators than to maintain and pay for salaries, space and hardware for that array of skills and tools), it will require exhibition staff offices and some realistic space for exhibition maintenance and repair, as well as storage for exhibition units which are currently not on exhibit. Crate storage for temporary shows should be in off-site rental space.

The only research facilities which are reasonable for the museum to provide are temporary desks and computer access for visiting university, FWS or student researchers. This is best located in conjunction with the resource center.

Building (mechanical, security) systems will be maintained largely by contractors who will require access to the building during non-public hours. On-site security during public hours also will be on a contract basis.

While it is highly desirable that the museum building, whether a repurposed facility or one which is purpose-built, be as environmentally responsible as possible, it is important to note that so-called "green"

buildings may cost more than what standard buildings cost. Thus, when the Board comes close to determining the ultimate capital costs of the facility, it will be wise to gather alternative (green and conventional) bids.

Audiences

Audience Composition

There are several definable audiences for the Rocky Flats Cold War Museum. The nature of the program, and the historic and nature of the site and activities conducted there, all suggest that the casual audience will be largely adult. Many of these will be people interested in the history of the place, the relationship of Rocky Flats to the U.S. Cold War defense industry, and the events which occurred at or near Rocky Flats. Others will have a much greater interest in the natural and remediated environments of Rocky Flats and the documentation of the cleanup and subsequent monitoring. The proximity to existing open spaces and the developing Front Range trail system will draw hikers and other outdoor enthusiasts.

The school group audience for the historical and Cold War elements will be limited, as these topics do not appear in the Colorado curriculum until middle and high school. By those grades organized field trips are minimal because of the difficulty of having a full class of students available for a field trip at a single time. However, the combination of nature, environmental education and Colorado history will make the museum a fulfilling visit for elementary school classes, that age group which makes up the large majority of museum groups.

A third audience is for the educational programming sponsored by the museum. This includes topical lectures, public seminars and symposiums, and potentially educational activities offered in conjunction with other organizations such as Elderhostel, the Thorne Ecological Institute, the Fish and Wildlife Service, the Colorado Department of Public Health and Environment, the Federal laboratories, the local universities, or interest groups such as The Nature Conservancy. The museum also can host meetings and seminars organized by the many Rocky Flats-centered groups such as RFCLOG, RFCAB, NJAG, the Homesteaders, the Rocky Mountain Peace and Justice Center and others.

Another, probably modest audience, is tourists along the Rocky Mountain Front Range “Tech Trail” from Golden to Boulder. This concept has been discussed with several of the laboratories and there is interest in a multi-party partnership to coordinate visits to and interpretation of the NREL Visitor Center in Golden, Rocky Flats, the National Wind Technology Center, NCAR, NIST, NOAA, and programs on the Colorado University and Colorado School of Mines campuses. Such a program could be marketed to scientific and professional societies and conferences which meet in Denver; the Denver Convention and Visitors Bureau could be another vehicle for promoting the Tech Trail.

Attendance Forecast

Attendance projects are framed in both absolute numbers and as market penetration (attendance as a percentage of a metropolitan area’s total population). The demographic analysis presented on pp. 19-23 above describes three different, progressively more localized population bases – metropolitan Denver, with 2.4 million people, Jefferson and Boulder Counties, together with 629,000 people, and finally 5-, 10-, and 20-mile radii around the intersection of U.S. Highway 36 and Church Ranch road, just east of Rocky Flats, with 2006 projected populations of 154,000, 480,000 and 1,153,000 respectively.

Using these county and localized overlays on the metropolitan population, with reference to the other nuclear museums and awareness of the educational attractions business nationally, the consultants developed the estimated stable-year attendance.

Paid	Low	High
Adults	35,000	45,000
Seniors (60+)	28,000	36,000
Children	7,000	9,000
	70,000	90,000
Special rate		
School Groups	10,000	10,000
	80,000	100,000
No charge		

Rocky Flats Cold War Museum

Members and complimentary	8,000	10,000
Total Attendance	88,000	110,000

Figure 26. Attendance estimates

The seemingly high number of “Members and Complimentary” visitors assumes that the Museum will provide special opportunities for the Homesteaders and their families, academics, and government-sponsored visitors, in addition to free admission to an initially-modest membership.

Additional audiences will be served off-site by outreach programming, both curriculum-specific for delivery to regional schools and topical for community-based organizations and the general public.

The attendance is conservatively forecast at 88,000 to 110,000 visitors annually for a stable year (e.g., the first year may be higher). This is a bit more than a 4% penetration rate of the metro Denver (Denver plus Boulder-Longmont PMSAs) population of 2.4 million residents. The other western atomic museums capture higher percentages (Figure 27): the National Atomic Museum has an attendance of 80,000 in an Albuquerque metropolitan area of 712,000 (a penetration rate of 11%) and the Bradbury Science Museum attracts 92,000 in a metro area of 147,000 which has a huge tourist market in Santa Fe (for a market penetration of 63%). The American Museum of Science and Energy in Oak Ridge has a penetration rate of 18% (125,000 in a market of 687,000). The Rocky Flats Cold War Museum’s attendance is estimated conservatively at a 4% market penetration because of the residual negative perceptions of the RFETS as well as the museum’s location (regardless of the particular site selected) being isolated from any other major attraction and accessed only by state highways. On the other hand, the proposed RFCWM sites are within a 30-minute drive of a highly educated, affluent northwest suburban population (Demographics; Figures 10 – 13).

Another way to estimate the availability of an audience for the RFCWM is to calculate the percentage of the total regional museum audience that belongs to a particular museum as is done for the three nuclear museums with attendance records. In Figure 27, the total attendance for the five largest attractions (which includes the nuclear museums in Albuquerque, Santa Fe/Los Alamos and Oak Ridge/Knoxville) is summed and the proportion of that total attendance for each of the nuclear museums is totaled. The comparable calculation for the Denver area, where the RFCWM is not predicted to be in the five highest, gives the RFCWM an estimated 2.16% of the top five. The RFCWM has to attract a very small proportion of the Denver market to succeed.

Albuquerque - 712,000		
Albuquerque Biopark	980,000	
New Mexico Museum Natural Hist	307,000	
Albuquerque Museum	158,000	
Indian Pueblo Cultural Center	97,000	
National Atomic Museum	80,000	4.9%

Santa Fe/Los Alamos - 147,000		
Museum of New Mexico	642,000	
Palace of the Governors	250,000	
Georgia O'Keefe Museum	194,000	
Museum of Fine Arts	125,000	
Bradbury Science Museum	92,000	7.0%

Las Vegas - 1,563,000		
Liberace Museum	100,000	
Lied Children's Museum	85,000	
Las Vegas Natural History Museum	70,000	
Atomic Testing Museum	70,000(e)	
Las Vegas Art Museum	50,000	

Oak Ridge/Knoxville - 687,000		
Knoxville Zoo	365,000	
Oak Ridge Children's Museum	150,000	
American Mus. Science & Energy	125,000	15.8%
Knoxville Museum of Art	91,000	
Discovery Center	57,000	

Figure 27. Five highest-attended museum attractions in four nuclear museum cities, with the proportion of that attendance devoted to the nuclear museum (except Las Vegas, where the museum is not yet open). Source: American Association of Museums; U.S. Census Bureau Census 2000.

Rocky Flats Cold War Museum

Further, this estimate does not explicitly count tourists/visitors to metro Denver that add to the resident population. This would include those individuals who, much like Civil War buffs visiting battlefields, are consciously visiting Cold War sites. The Denver Convention and Visitors Bureau estimates that some ten million people visit Denver annually, either on business, as tourists, or visiting family and friends. There will be some visitation from this demographic.

Other reasons for high confidence the 88,000-110,000 attendance estimate are that there is no competition for the primary subject matter and the “place” that is Rocky Flats is utterly unique.

If a decision is made to locate the Rocky Flats Cold War Museum in a location remote or distant from the RFETS, new calculations will have to be made. This estimate is dependent upon having the power of place and a diversity of programs including those on the National Wildlife Refuge.

To put this estimate for the RFCWM in perspective, here is how that estimated attendance would rank the Rocky Flats Cold War Museum among Denver-area museums (most recent year reported):

Denver Zoo	1,723,000
Denver Museum of Nature & Science	1,346,000
Colorado's Ocean Journey	562,000
Denver Botanical Garden	486,000
Denver Art Museum	455,000
Colorado Historical Society	371,000
Denver Children's Museum	173,000
Butterfly Pavilion	130,000
Littleton Historical Museum	105,000
Rocky Flats Cold War Museum	99,000
Buffalo Bill Memorial	65,000
Muse de las Americas	65,000
Longmont Museum	50,000
Boulder Museum of Contemporary Art	50,000
Jefferson County Planetarium	47,000
CU Natural History Museum	34,000

Figure 29. Comparative attendances for Denver-area museums. Sources: American Association of Museums; individual museums.

Partners and Collaborators

The feasibility study revealed numerous opportunities for the Rocky Flats Cold War Museum to develop partnerships, collaborations and, depending on facility requirements, possible space rental (tenant) relationships.

U.S. Department of Energy

DOE has an ongoing stewardship and monitoring responsibility for Rocky Flats as per the RFCA, even after the majority of the property is turned over to the Fish and Wildlife Service for management and interpretation. The RFCWM should investigate entering into an agreement with DOE to provide: 1) public access to real-time data from the various monitoring stations; 2) public access to the longitudinal information gathered from the monitoring and interpreted for management purposes; and 3) interpretive services to DOE for the purposes of facilitating public understanding of the monitoring process and the meaning of the data gathered.

U.S. Fish and Wildlife Service

As the manager of the Rocky Flats National Wildlife Refuge, the U.S. Fish and Wildlife Service will have responsibility for public site access and interpretation (as ultimately defined in their CCP, currently in development). The RFCWM can materially assist the FWS interpretive mission by providing trained interpreters who can move easily between the indoor exhibitions and programs of the RFCWM and the outdoor natural and cultural resources managed by FWS. The RFCWM should consider entering into an agreement with the FWS to provide one or more of: 1) introductory exhibitions and other information about the Refuge; 2) public access to the land management monitoring data accumulated by FWS and used to direct land management practices; 3) facilities to house essential FWS personnel devoted to Rocky Flats; and 4) interpretive services to FWS for the purposes of facilitating public understanding of the natural resources of Rocky Flats, the environmental monitoring process and the meaning of the data gathered.

Colorado Department of Public Health and Environment

The Department requires places where the interested public and scholars can access public health records and observe the data-gathering that is essential to good public health practices regarding Rocky Flats. The RFCWM can provide a centralized location for such data and interaction. The RFCWM should consider entering into an agreement with the CDPHE to provide such access as is desirable and practical.

Thorne Ecological Institute, local school districts, colleges and universities

The RFCWM, together with FWS, has a remarkable opportunity to intersect with new ecological programs at Sombra Marsh (Boulder Valley School District) as well as the creative research and investigative programs for middle and high school students offered by the Boulder-based Thorne Ecological Institute. The unusual and unique environments of Rocky Flats provide exceptional opportunities for field courses, focused field trips, and student-directed research. There also are opportunities for college and university faculty and students (especially the University of Colorado at Boulder and Colorado School of Mines) to carry out a variety of research projects, using both the resource center collections, ongoing monitoring data, and the exceptional resources of the Refuge.

National Renewable Energy Laboratory

NREL researchers, in conversations with Board President Ed Wolfrum, have indicated their willingness to work with the RFCWM to strive for LEED (“green”) certification of either a renovated facility or new construction. Thus, the RFCWM could become a NREL demonstration project.

NREL (Visitor Center and NWTC), NCAR, NIST, NOAA, CU

The RFCWM can be the catalyst for the development of a Front Range “Tech Tour” which can include all of these agencies, consortia and organizations, plus others as may express interest and have a public face to be interpreted. While this probably will not have a huge audience, the niche audience is an important one, as the opportunity for all involved to help the broad public understand their institutional missions and accomplishments. With the RFCWM as the central agency in the “Tech Tour,” the events and technology of Rocky Flats will be placed in a broader research, environmental, geopolitical and historical context.

Rocky Flats Reading Rooms

The Resource Center at the RFCWM will likely have materials which overlap with or duplicate the holdings of the several Rocky Flats Reading Rooms. As plans develop for the RFCWM Resource Center, the museum may be able to develop a collecting and records management policy which complements those of the other sites or, alternatively, may become a centralized center for documentation as well as for ongoing monitoring records.

Rocky Flats Wall of Honor

Ms. Karen Falls of Broomfield, whose parents (father for 33 years and mother for 28 years) worked at Rocky Flats, whose sisters worked there, and who herself worked there twice, is spearheading a campaign for a memorial to those who have worked at the plant during its production years and/or who have been involved in the cleanup effort. She is coordinating her efforts with Psi Seminars of Clearlake Oaks, CA, an international organization devoted to assisting people reach their potential, and does not expect any financial support from the RFCWM project. The Homesteaders are providing her campaign with moral support.

She envisions a carved Colorado marble wall bearing the names and dates of employment for all current and former workers who choose to have their time at Rocky Flats commemorated. While many details—including the cost and feasibility—of her idea remain to be determined, such a memorial wall could be an interesting and striking addition to the museum site.

Cost Estimate

Basic facility construction/renovation costs are based on those calculated by the American Association of Museums, with a tilt toward the building services and complexity required by interactive exhibits and a highly engaged audience (e.g., we use science center numbers which tend to be higher than those of more modest and static museums).

Facility

ILE presents facility cost estimates based on repurposing either Building 60 or Building 61 as well as on new construction of either 31,000 square feet (equal to the footprint of Building 60) or 45,000 square feet (equal to the footprint of Building 61) irrespective of the actual site of the building. The calculations for the existing Building 61 include an acceleration factor to account for the current absence of infrastructure in most of that structure. Use of the existing building(s) must include purchase or lease of same.

	Building 60	Building 61	New (31,000 ft ²)	New (45,000 ft ²)
Lease	\$35,515/mo	\$21,000/mo		
Purchase	\$4,200,000			
Renovate	\$2,325,000-\$3,100,000	\$4,500,000		
New Construction			\$6,200,000-\$7,750,000	\$9,000,000-\$11,250,000

Figure 30. Renovation/construction estimates. Based on information from RAC 56Development, Inc. and the American Association of Museums.

Appendix 4 details the American Association of Museums' most recent analysis of building expansion, renovation and construction costs. The new construction estimates used above are in the mid-range of the AAM's figures.

Exhibition Development and Fabrication Costs

At current development and fabrication costs, the full exhibition cost is estimated to be about \$4,000,000. This is based on approximately 16,000 square feet of long-term exhibits, 1,500 square feet devoted to traveling exhibitions (budgeted separately), and 2,500 square feet of circulation space within and between exhibition areas. Well-designed and constructed exhibitions with immersion environments, significant audiovisual stations and a reasonable amount of interactivity currently cost in the neighborhood of \$250 per square foot. This cost could go higher if the degree of interactivity were that of a high-energy science center.

Business Plan/Operating Costs

This section is based on 2003 costs. Salaries are estimated based upon currently published industry averages (Association of Science-Technology Centers, American Association of Museums, Association of Art Museum Directors) and local institutions' form 990s. Specific operating revenues and costs are based upon actual figures from the consultants' clients plus averages published by the American Association of Museums and the Association of Science-Technology Centers.

The staffing plan is predicated on the availability of a pool of talented volunteers, both former Rocky Flats employees and their families and other interested individuals. In the absence of volunteers to do on-the-floor programming, assist with admissions and visitor service functions, and to assist paid staff with various daily operational activities, the paid staff will be larger. As it is, some of the positions in this plan may be part-time, allowing for a larger number of paid employees. The salaries are based upon current average salaries for small to medium-sized museums, confirmed with salaries reported on the IRS forms 990 of Denver-area museums.

Executive Director

\$90,000

Rocky Flats Cold War Museum

Director of Development	\$56,000
Building Operations Manager	\$50,000
Director of Education	\$42,000
Director of Exhibits	\$46,000
Admissions Coordinator	\$35,000
Controller	\$46,000
Resource Center Manager	\$40,000
Educator	\$33,000
Exhibits Technician	\$30,000
Administrative Assistant	\$30,000
Admissions Clerk/Sales	\$25,000
Admissions Clerk/Scheduling	\$25,000
Maintenance Technician	\$25,000
Demonstrator	\$25,000
Volunteer Coordinator	\$25,000
	\$623,000
Average	\$38,938
(Base salaries; benefits additional)	

Figure 31. Staffing plan with salaries: ILE/ ERA estimate

Paid Attendance			70,000		90,000			Ave.
\$ 6.50	Adults	50%	35,000	\$227,500	45,000	\$292,500		
\$ 5.00	Seniors	40%	28,000	\$140,000	36,000	\$180,000		
\$ 5.00	Children	10%	7,000	\$35,000	9,000	\$45,000		
\$ 2.50	School Groups	10,000	10,000	\$25,000	10,000	\$25,000		
			80,000	\$427,500	100,000	\$542,500		\$485,000
Unpaid & member attendance			10%	8,000	10,000			
Total Attendance				88,000	110,000			99,000

Figure 32. Attendance revenues; ILE/ERA estimate

Rocky Flats Cold War Museum

Revenues

Earned			Calculation	
	Admissions		See chart	\$485,000
	Program Fees	\$10	5,000 participants	\$50,000
	Merchandise	\$2	Per attendee	\$198,000
	Vending	\$1	Per attendee	\$99,000
	Facility Rentals	\$300	50	\$15,000
	Memberships	\$50	500	\$25,000
Subtotal				\$872,000
Unearned				\$566,510
Total Revenues				\$1,438,510

Expenses

Labor				
	Professional	16	FTE	\$623,000
	Benefits	25%		\$155,750
Subtotal				\$778,750
	Vending CoGS	50%	Vending revenue	\$49,500
	Merchandise CoGS	50%	Merchandise revenue	\$99,000
	Program Operating Costs	10%	Program revenue	\$5,000
	Exhibit rental		3 @ \$25,000	\$75,000
	Operations & Insurance	\$4.50	Per SF	\$135,000
	Maintenance	\$0.60	Per SF	\$18,000
	Professional services	3%	Revenue	\$26,160
	Advertising	\$1.10	Per attendee	\$108,900
	Membership	80%	Membership revenue	\$20,000
	Supplies	\$2,000	Per FTE	\$32,000
	Travel	\$500	Per FTE	\$8,000
	Development	\$0.40	Per attendee	\$39,600
	Contingency	5%	Revenue	\$43,600
Subtotal				\$659,760
Total				\$1,438,510

Figure 33. Operating revenues and expenses; ILE/ERA estimate

External utilities and services are dependent on whether water is brought to one of the sites via a new municipal pipeline service from Arvada or whether water is trucked to the site and stored in code-determined cisterns. All other services—electricity, gas, sewage, telecommunications—are available either on-site or via commercial common providers already in place. The LEED qualities of the facility will also be reflected in operating costs.

Unearned income refers to that which is contributed by an individual, corporation or foundation, appropriated/allocated by a unit or agency of a government, or derived from the earnings on an organization's investments and/or endowment. It is typical that all these sources are tapped by a museum, although the relative proportions will vary substantially. In addition to the usual sources of unearned income, the RFCWM will benefit from some, as yet to be determined, amount from an allocation from the Scientific and Cultural Funding District (assuming it is continued in the next reauthorization referendum which will be held in 2004). Based on current Jefferson County Tier III allocations (SCFD 2001 Annual Report), the Rocky Flats Cold War Museum might anticipate \$20,000 in SCFD operating support, plus a few thousand dollars in addition for specific programs.

Tables in Appendices 5-8, drawn from the American Association of Museums' 2003 *Museum Financial Information* publication, illustrate the national range of unearned revenue sources.

This preliminary operating estimate does not include dedicated project funds, such as might become available through specific grants and contracts. Some grants (e.g., from the National Endowment for the Humanities or the National Science Foundation) include calculated overhead or indirect costs. Those funds can be applied to operating expenses. Other grants provide funding solely to the defined project and do not contribute to the operating budget. Thus, generally accepted practice is to hold project funds in restricted accounts which are not part of the operating budget.

Phased Development

Phased development always is possible, but it works differently with different kinds of museums. It is easiest in institutions such as children's museums and science centers, where galleries/experiences do not build upon each other. It is most difficult with stories and themes such as those of the RFCWM which depend on a complete chronology and in which all the parts have to be in place for the whole to make sense. For example, think of the differences between the Colorado Historical Museum's central presentation, and the lack of same at the Denver Children's Museum.

Therefore, a phased development of the Rocky Flats Cold War Museum should be examined from two perspectives. The public's experience, which is largely the exhibits, will require a careful development of the exhibition story which ensures that visitors understand the big picture at the very beginning. This is possible, but poses a significant challenge to an exhibit designer. Furthermore, this initial phase must be compelling enough, and have enough substance, to ensure good "word of mouth" and likely return visits. If it is immediately regarded as superficial, incomplete, or too small, the museum will suffer.

Other, physical, aspects of phasing are somewhat easier. For example, the Resource Room, the Monitoring Stations, the collaborative activities including the Tech trail, and outreach programs, can come on line after the museum experience itself is complete. However, every major activity which is delayed, especially those with a high public profile, will affect the museum's ability to a) project into the broad Denver community, b) generate essential earned revenues, or c) develop revenue flows from collaborators.

Above all, the first phase of a phased development must, standing alone, be a viable operation.

If, in the face of either difficulties with site selection and development or fundraising, phased development becomes a preferred option, a detailed strategic plan for that process will have to be developed. Its parameters cannot be determined now; they will depend on the circumstances (physical, financial, political) of the moment.

The Board and Its Responsibilities

The Board of the Rocky Flats Cold War Museum is doing exemplary work at this very early stage in the development of the museum. It truly is a “working board,” one with a committee structure and dedicated volunteers performing very basic functions in the service of an organization that is determining how to come into being and meet its expressed mission.

When the museum moves into the next phase – that of an authorized project, which has at least some capital funding and political endorsements, and is looking to move into serious architectural and experience planning – the role and responsibilities of the Board will evolve.

While the Board will never shed responsibility for policy oversight of the museum, it quickly will take on a much heavier and broader series of responsibilities. These will include the careful political positioning of the museum within Colorado and on the federal scene, possibly facilitating local discussions about the site for the museum and the consequences of that site for others, promoting the developing museum throughout the Denver community, and, of great importance, securing the funding necessary for implementation of the plans which will follow this feasibility study.

This last function is one which the Board must consider very carefully, and assess its ability to effectively carry out in its current configuration.

The consultants recommend that the Board conduct a careful audit of its current capabilities and influence with full awareness of the skills, contacts, and influence necessary to raise not only the capital monies needed to get the museum started, but also the ongoing need to raise at least \$500,000 annually to complement the revenues brought in by the museum’s activities. This audit, in all probability, will require that the Board be expanded and that new members be recruited who have the presence, prominence, and personal resources that are necessary for the initial development and ongoing operations of the museum.

Action Plan/Implementation Schedule

A December 2006 opening date for the Rocky Flats Cold War Museum will position it to capture major media attention. By being integrated into the ceremonial completion of the cleanup, the museum will be part of a much larger event than merely its own opening, and also will give various agencies a good opportunity to celebrate the future just as they are closing the book on the past.

This is a very aggressive schedule and requires immediate and effective action.

Following is a rough, telegraphic, and general implementation schedule, laid out in yearly increments. This will have to be parsed much more finely as soon as a decision is made to move ahead with the museum.

2003

Submission of report and recommendations to the Rocky Flats Cold War Museum Board, Kaiser Hill Company, LLC, and the Department of Energy

Action by DOE

Initial funding secured

Building/site selection and confirmation

2004 interim budget developed, source(s) identified, and commitments made

Masterplanning begins

Capital fundraising plan developed

Federal sources

Private sources

Web site further developed

2004

Initial support staff hired

Capital campaign underway; campaign team in place

Board in fundraising mode

Architect hired for either renovation or new construction

Building construction/renovation begun

Web site populated

Senior development/marketing, program, exhibition, and operations staff in place

MOUs with agencies and partners; needs (space and staff) defined

2005, 2006 and operating budgets defined

Masterplanning completed

Exhibition and program design begins

Oral histories available for use

2005

Building renovation/construction completed

Exhibition and program design completed

Initial activities with agencies and partners

Board in fundraising mode

All senior staff in place

Preparation of initial locally-traveling exhibition(s)

Preparation of marketing and pre-opening campaign

Initial educational outreach

2006

Exhibits fabricated and installed

On-site programming developed

Full staff in place

Fundraising largely completed; board in operational mode

All printed materials prepared

Web site current

Pre-opening events

Conclusions and Recommendations

This study concludes that the concept of the Rocky Flats Cold War Museum is viable at a modest level and with substantial board and community involvement.

The consulting team recommends that the Board proceed as quickly as possible to endorse the broad outline presented here, share the report with Kaiser Hill Company, LLC, and forward the report to the Department of Energy, encouraging DOE to both approve the museum concept and general plan and provide or assist with the provision of immediate funding for developing the next stage of planning and implementation.

The further planning of the Rocky Flats Cold War Museum should anticipate an estimated annual attendance of between 88,000 and 110,000 and an estimated annual operating budget of between \$1,500,000 and \$2,000,000. The museum must be located close to the present Rocky Flats Environmental Technology Site for maximum impact; three alternatives are developed. A location at or near current Buildings 60 and 61 is preferred.

The issue of water service to the recommended site will need to be addressed in a timely fashion.

Depending on whether existing buildings can or will be leased or purchased and then renovated, or whether new construction will be necessary, facility capital costs are estimated to range between \$6,000,000 and \$9,000,000. LEED certification may have a construction premium followed by operational advantages.

If a Rocky Flats Wall of Honor is installed near the museum, it should be developed and funded separately from the RFCWM.

The museum's approximately 20,000 square feet of exhibitions should be immersive, using a broad array of exhibition strategies and taking good advantage of the collection of artifacts and the powerful oral histories currently being gathered. The museum should also feature changing exhibitions, likely using materials developed in conjunction with the other "nuclear museums." At current development and fabrication costs, the Board should anticipate the full exhibition cost to be an estimated \$4,000,000.

The Board should be aware that the museum should serve the vital role of facilitating public access to the site monitoring process and to the documents defining and describing the history and operations of both production and cleanup. It also should be a much-needed public forum for ongoing study and discussion of all aspects of Rocky Flats.

The study proposes an aggressive development schedule, proposing that the museum open simultaneously with the completing of site cleanup in late 2006. This requires adopting the planning steps outlined in the Implementation Schedule above.

The preliminary design for the museum's exhibitions has been developed by Gallagher and Associates; this firm should be encouraged to submit a proposal for full exhibition master-planning. The Board may wish to have an open competition for further exhibition design; ILE is prepared to assist with this process.

ILE also is prepared to continue to assist the RFCWM and its staff in other developmental aspects of the museum.

Procedural recommendation

The RFCWM Board must bear in mind that Cold War and nuclear history are topics which provoke great passion and controversy among both acknowledged stakeholders and the broad public. Often, these lead stakeholders (individuals and organizations) to adopt a particular view of history as "true" and "appropriate," and to attack alternative views and their spokespersons as inherently "false" and "illegitimate." This study has demonstrated the virtually intractable difficulties that can result (and have resulted at other institutions). The RFCWM should adopt those best practices and procedures that can

reduce the likelihood that conflicts and differing interpretations of Rocky Flats' unresolved history will undermine successful development and operation of the museum. To this end, the consulting team recommends that the Board do the following:

- 1) Cultivate and maintain a strong ethic of inclusiveness, dialogue, mutual learning, and civility among and between Board Members, advisor and consultants;
- 2) Ensure, by means of a rigorous parliamentary process, that the RFCWM is not "captured" by a single stakeholder, such that the museum and/or its programming are—or are merely perceived to be—exclusively “owned” by that stakeholder (i.e., as an uncritical conduit for its preferred viewpoints). To a significant extent this already has been accomplished, in that the RFCWM is an independent 501.c.3 organization, independent of any government agency;
- 3) Develop a mechanism whereby Board Members and exhibit development staff/consultants, are able to exercise legitimate oversight and appropriate independent expertise in determining exhibit form and content;
- 4) Develop a dialogue/storytelling exhibition approach in which multiple and conflicting points of view on Rocky Flats history can be presented, without attempting to prematurely resolve them as a single, objective, unquestioned “truth”; and
- 5) Develop and seriously use a RFCWM Advisory Board composed of museum professionals, academics, and relevant stakeholders, to review and contribute to ongoing operations. This advisory group should include current directors/board members of other “nuclear museums,” scholars who study the Cold War and its aftermath, representatives of organizations concerned with the current/future use of Rocky Flats, and representatives of current and potential partners. A caution to this recommendation, however, is to avoid this becoming such a large and cumbersome group that it itself is non-functional.

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Appendix 1. Interviews and Site Visits

Interviews, Individual and Group (some multiple times)

Len Ackland—author, board
Ken Brakken—DOE Heritage
Linda Carbone—NCAR
Ray Cheeney—RAC Development Corp.; owns current VC property
Dorothy Ciarlo—Boulder Library, board
Alan Clark—NIST
John Corsi—Kaiser Hill, board
Mike Elms—Arvada Planning Dept
Karen Falls—advocate for RF Honor Wall
Fred Fraikor—Director, CAMI, CO School of Mines, Board
Jerry Gilmore—Arvada Center for Arts and Humanities
Kim Grant—City of Arvada, board
Debbie Grieco—board
Aislinn Hamilton—staff to Rep. Beauprez
Katy Human—Boulder *Camera*
Carolyn Jefferson-Jenkins—Boulder Valley Schools
Nancy Kellogg—science education consultant
Roman & Susan Kohler—Homesteaders, board
Ken Korkia-RFCAB
Mary Ann Mahoney—Boulder Convention and Visitor Bureau
Charlie McKay—Church Ranch Development
Carol McLaren-Science Discovery
Dan Miller—Asst. Colorado Attorney General
LeRoy Moore—Rocky Mtn. Peace & Justice, board
Marcie Moore-Gantz—Scientific and Cultural Funding District
Bruce Nickerson—Vice President, General Manager of Vauxmont
Hannah Nordhaus—Writer/Editor
Kristi Pollard—staff to Senator Allard
John Rampe—DOE
Don Rohlf-Homesteaders, board
Jeff Romine—DRCOG
Janice Rooney—NREL Golden
Laurie Shannon—FWS
Bryan Taylor—CU, board
Meg Van Ness—CO Historical Society, board
Troy Wade—Nevada Test Site President
Mike Way—CO Alliance for Environmental Education
Ed Wolfrum—NREL, board
Doug Young—staff to Rep. Udall

Atomic Heritage Foundation, Washington, DC
Participant list, Jan. 30, 2003
Cindy Kelly, President
City of Boulder
Mike Weil
Dave Sutherland
Colorado Dept. Public Health & Environment
Steve Gunderson
Steve Tarlton
Kay Juricek
Denver Museum of Nature and Science
Raylene Decatur
Richard Stucky

Environmental meeting

Steve Tarlton—CO Department of Public Health & Environment

Frank Kanze—Jeffco Open Space

Paul Kilburn—North Jeffco Area Group

Shirley Garcia (above)

Deb Grieco (above)

Alan Clark—Superior Open Space

John Young—City of Arvada

Matt Jones—City of Boulder Open Space

Ken Brakken—above

Jefferson County Planning and Zoning

Richard Turner

Nanette Neelan

Jean Schwart

NIST

Zelda Chapman Bailey

Edie de Wiese

NWTC

Robert Thresher

James Johnson

RFCAB—meeting April 3

RFCLOG

David Abelson, Executive Director

Kimberly Chleboun, Program Manager

Albert Nelson, Westminster

Clark Johnson, Ass't to City Manager, Arvada

Shirley Garcia, Env. Serv. Coord., Broomfield

Emily Moon, Management Analyst, Westminster

RFCWM Board—April 16 and June 25 meetings

Site Visits

Arvada Center for the Arts and Humanities—Jerry Gilmore, Curator

Bradbury Science Museum, Los Alamos—John Rhoades, Director

Colorado Historical Museum

Denver Museum of Nature and Science

National Atomic Museum, Albuquerque—Jim Walther, Director

Nevada Atomic Test Site Museum, Las Vegas—Art Wolfe, Director

NCAR, Boulder—Linda Carbone, Education Director

NIST, Boulder—Zelda Chapman Bailey, Director

NREL, Golden—Janice Rooney

NWTC, Rocky Flats—Robert Thresher, Director

Rocky Flats Reading Room, Denver Department of Public Health and Environment

Rocky Mountain Arsenal

Recalled visits (from previous Denver-area assignments)

Butterfly Pavilion

Celestial Seasonings

Colorado's Ocean Journey

CU Museum

Denver Children's Museum

Denver Public Library

Leaning Tree Musuem

Appendix 2. Comparable and Reference Organizations

WWII and Cold War Site Visitor/Interpretive Centers

Three sites have been identified as moving on courses somewhat similar to that of Rocky Flats—Fernald and Mound in Ohio and Weldon Spring in Missouri.

Fernald, Ohio

Fernald, just northwest of Cincinnati, is the most similar to what is being developed at Rocky Flats. Very similar to Rocky Flats, the Fernald site produced uranium metals used in the production of nuclear weapons from 1952 to 1989, and is scheduled for closure in 2006. The Fernald Citizens Advisory Board has been very active in developing a series of recommendations to DOE for the public uses of that site following closure. These were developed through a series of open community meetings and a formal study conducted by The Perspectives Group of Arlington, VA. This entire report is at www.fernaldcab.org/FRReport/FRReport.html.

“Fernald Stakeholders envision a future for the Fernald property that creates a federally-owned regional destination for educating this and future generations about the rich and varied history of Fernald. We envision a community resource that serves the ongoing information needs of area residents, education needs of local academic institutions, and reinterment of Native American remains. We envision a safe, secure, and partially accessible site, integrated with the surrounding community that effectively protects human health and the environment from all residual contamination and fully maintains all aspects of the ecological restoration.” (The Perspectives Group, 2002, p. 15)

During the community meetings, four future areas of investigation and activity were identified: Native American history and remains; Public use of the land; Environmental education; and Local and Cold War history. The Perspective Group’s report concludes that a Multi-Use Educational Facility will serve the several identified needs of the site as follows:

- Establish a continuous presence at the site to keep the community aware of the site and involved in long-term stewardship activities.
- Provide a central location to raise and maintain awareness of the Fernald Site, its history, and the controls that are in place to protect human health and the environment.
- Provide a focal point for educational opportunities among area schools on environmental issues and Fernald history.
- Integrate the many future uses of the Fernald site including environmental restoration and research, long-term stewardship, monitoring and maintenance, education, and Native American History.
- Provide office space and logistical facilities for site stewards. This could serve as the repository for information required to carry out long-term stewardship activities.
- Become an asset to the local community and help to transform the legacy of Fernald from a negative one to a positive one.



Figure 34. Multi-Use Educational Facility at Fernald Site.
Source: web site.

A charette with a local architect produced a series of sketches and elevations for a proposed building to house the Multi-Use Educational Facility. The Perspectives Group recommended that the Fernald CAB's next task is to commission a feasibility study for that proposed facility and its programs.

Another recommendation came from the FCAB, pertaining to the design and use of trails on the Fernald site. It is envisioned that trails will provide access to key ecological areas, facilitate environmental education activities, provide access to areas where environmental monitoring is underway, minimize environmental impacts, connect with the Multi-Use Educational Center as well as the Native American burial site, be at least somewhat handicap accessible, and include historical, environmental and educational interpretive markers.

Relevance

The Fernald site, like Rocky Flats, is complex, with both Cold War and regional history and natural environment attributes. The engagement of the CAB in determining the educational functions is a useful parallel. Development of Fernald is proceeding at a different pace from that of Rocky Flats.

Mound, Ohio

Mound, also in southwestern Ohio, was a Department of Energy lab where weapons components were researched, developed, tested and produced. It is being redeveloped in a very different way from either Rocky Flats or Fernald. It is being turned over to the Miamisburg Mound Community Improvement Corporation, a community reuse organization, which, with support from DOE, is redeveloping the Mound site for a new use as the Mound Advanced Technology Center with numerous startup and high technology companies leasing the former DOE facilities. Thirty companies with 350 employees already are located there. The former Guard House Building, at the highest point on the site, was turned over to the Mound Museum Association in the fall of 2002. The 5,000 square foot building will be converted to an exhibition space and also will contain the Freedom of Information Reading Room where DOE provides access to public documents. This museum is just beginning to plan its activities.

Relevance

The public facility at Mound is small, and is nestled in a complex of existing DOE-constructed buildings being renovated for commercial use. This redevelopment model is inappropriate for Rocky Flats. There is no natural site to be interpreted. The Mound Museum Association is a totally volunteer operation with annual income less than \$25,000.

Weldon Spring Site, MO

The Weldon Spring Site, west of St. Louis, has been used sequentially as a WWII explosives production facility, a processor of concentrated uranium ore, and disposal of uranium and thorium residues in the quarry. Remediation began in 1986 and has been completed. The site is now occupied by a 45-acre engineered disposal cell and the quarry has been backfilled and seeded. A simple 9,375-square foot building now houses the Weldon Spring Site Interpretive Center, dedicated on August 5, 2002.

The Interpretive Center is operated by the Department of Energy through its contractor as part of its Weldon Spring Site Remedial Action Project. Interpretive activities include details of the remediation effort, disposal cell engineering, and histories of the towns that previously occupied the area. The center has one fulltime and one part-time employee plus weekend hourly employees during the summer season. The center is open seven days per week during the summer and Monday—Saturday the rest of the year.

As a new facility, it still is getting its programs and activities organized. It is developing programs for schools, grade five and above through the university level, and will be working with the state to coordinate with the activities at the Wildlife Area. The state currently is installing interpretive signage on the Hamburg Trail (the segment of the Katy Trail that crosses the site).

There is no admission charge, and as yet no effective system for counting visitors. The current estimate is a yearly visitation of 1,500 to 2,000.



Figure 35. Weldon Spring Site Visitor Center. Source: web site.



Figure 36. Weldon Spring Site Visitor Center exhibits. Source: web site.

The building and exhibits are well illustrated on the web site www.wsrp.com. Most of the exhibits are panels with photographs and text copy. The focus is very tight on the military production activities at Weldon Springs and the subsequent cleanup.

The Interpretive Center opens onto a stairway to the top of the 75-foot disposal cell. Newly constructed trails connect the Interpretive Center with the Katy Trail that runs across the state along the Missouri River, and to the wildlife center at the August A. Busch Memorial Wildlife Area.

Relevance

The scope of the interpretation includes local history, and DOE has consciously linked the site with the regional trail system. The nearby August A. Busch Memorial Wildlife Area, operated by the State of Missouri, originally was part of the 17,000 acre Weldon Spring Ordnance Works. Thus, similar to the plan for Rocky Flats, there is an interpretive relationship between the weapons production history and the natural and environmental values of the region.

Contact: Denise Mercer, 636.6926.7027.

The Nuclear Museums

Four existing and one developing museums provide insights into both relationships with DOE and approaches to legacy interpretation. All of these comparables are more formally structured as public museums than are the interpretive centers described above.

National Atomic Museum, Albuquerque, NM

The National Atomic Museum was located on Kirtland Air Force Base until early 2002 when, after increased security at the base eliminated public visitation, it temporarily relocated to a storefront in the Museum District of Albuquerque. It is preparing to build a new 40,000 square foot facility at the Albuquerque Balloon Fiesta Park. When it relocates there in 2006 it will be renamed the National Museum of Nuclear Science and History.



Figure 37. Temporary building of National Atomic Museum. Source: ILE photo.

Originally operated by the Sandia National Laboratory, in recent years the museum has been privatizing. Currently all operations and most staff costs are provided by the non-profit National Atomic Museum Foundation, and the few remaining DOE salaries will expire shortly.

The museum attracted 80,000 visitors annually at the Kirtland Air Force Base site; Director Jim Walther believes the attendance is higher at the temporary city site. There are 14 FT, 4 PT and 65 volunteer staff.

As the museum transitions from the base to its Balloon Fiesta Park site, it also is changing the emphasis of its programs to be more inclusive. Exhibits already reflect more of the civilian nuclear science and history mandated in the museum's mission, including applications of nuclear energy and power in the contemporary world. For example, the current exhibit "X is for X-Ray" features the historic, scientific, medical and popular culture implications of x-ray technology. The museum also has a children's area, a "Zoom Room," based on the popular PBS children's TV show "ZOOM."



Figure 38. Missile exhibit. Source: ILE photo.



Figure 39. Nuclear Waste. ILE.

Figure 40. Nuclear culture. ILE.

Relevance

On May 16, 2003, the museum announced a \$2.5 million contribution from DOE to its \$18 million capital campaign. The announcement gave full credit to the New Mexico congressional delegation for its assistance in obtaining the funds. The decreasing reliance on Sandia is allowing the museum more flexibility in what its exhibits and what kind of programming it does. The expansiveness is indicated by the presence of the Zoom Room, which clearly has little relationship to either nuclear energy/science or

the Cold War. However, that changing relationship requires a very strong private board skilled in raising money.

The National Atomic Museum also is seeking to avoid being regarded as solely a “bomb museum,” but rather one that attracts a broad audience, tells both (?all) sides of the nuclear story, and discusses the remarkable science and history of the Nuclear Age.

Bradbury Science Museum, Los Alamos, NM

Bradbury Science Museum, owned and operated by the Department of Energy, is located in the middle of the former “secret city” of Los Alamos. It is in a contemporary, but small building. A large book and souvenir store is immediately adjacent, relieving the museum of that burden (as well as revenue).



Figure 41. Bradbury Science Museum. Source: ILE photo.

The exhibits are a combination of Manhattan Project/Cold War history and discussions of current Los Alamos National Laboratory research projects in the physical and biological sciences. Many are text-intensive.

In addition to an excellent overview video, a computer calculation of visitors’ lifetime radiation loads, and several interactive simulations of the scientific process as represented by actual LANL work, there is an alcove devoted to views dissenting from those of LANL and DOE. This alcove has been the focal point for ongoing discussions, some very heated, about the Cold War and nuclear weapons. This conflict has been thoroughly researched by RFCWM Board member Bryan Taylor (1997).

The museum attracts 90,000+ visitors annually, many of who are tourists based in Santa Fe, but it also hosts a wide array of student and family programming as well as lectures and seminars. It is operated by a staff of eight FT, 13 PT and an unknown number of volunteers.



Figure 42. Los Alamos research computer exhibition. ILE.



Figure 43. Varying interpretations. ILE.

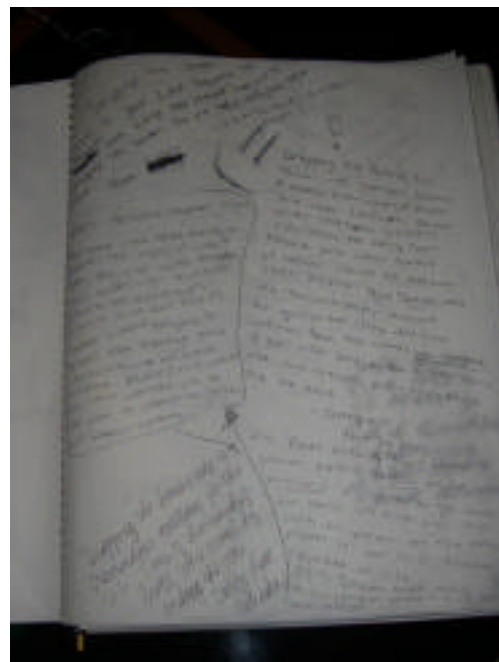


Figure 44. Visitor comment book. ILE

Relevance

Being owned and operated by DOE and its contractor frees Bradbury from some management costs as well as from the need to fund-raise. However, it also is limited in its ability to promote itself and must have many materials vetted by DOE prior to their being made publicly available. It also—as indicated in the comment book—is suspect as a biased DOE mouthpiece.

Atomic Testing Museum, Las Vegas, NV

“Our mission is to preserve and foster public accessibility to the history associated with the NTS and the nation's nuclear weapons testing program. The Foundation promotes and supports cultural, educational and scientific programming to encourage the development and public exchange of views regarding the NTS and its impact on the nation.”

The Atomic Testing Museum, currently under construction and installation, will open its temporary exhibition gallery in the fall of 2003 with Francis Gary Powers, Jr.'s U-2 exhibition. The 8,000 square foot permanent galleries will open in the summer of 2004. A virtual tour of the exhibits is at <http://www.ntshf.org/tour.htm>.

The Atomic Testing Museum is 13,000 square feet of the 66,000, \$13.1 million Frank H. Rogers Building on the Desert Research Institute campus near downtown Las Vegas. It will share auditorium and collection facilities with the DRI. The museum will open with five FT staff and up to 100 volunteers. The attendance is estimated at about 70,000, with an operating budget of \$800,000 to \$1,200,000.



Figure 45. Desert Research Institute Frank H. Rogers Building. Source: ILE photo.



Figure 46. Atomic Testing Museum lobby. Source: ILE photo.

Relevance

The ATM, while operated by the independent Nevada Test Site Heritage Museum Foundation, has very close ties with both DRI and DOE. Many of the key players are former DOE staff, and U.S. Senator Harry Reid and Nevada State Senator (and NTSHMF trustee) Dina Titus have been very helpful in obtaining federal and state funding for the \$5.5 million museum project. The Director, Arthur Wolf, has abundant experience. However, he arrived after the exhibits and graphics were well developed and therefore has had little input into the “voice” of the exhibitions.

The arrangements with the University of Nevada System and DOE (including the General Services Administration) are very favorable to the museum. It will not pay a lease for its first five years, and will open with endowment money in place. The DRI is the management administrator of the project, thus absorbing significant overhead costs.

American Museum of Science and Energy, Oak Ridge, TN

The American Museum of Science and Energy, originally the American Museum of Atomic Energy (the name was changed in 1979), is located in Oak Ridge, TN, another WWII “secret city.”

Over the years it has evolved from being an atomic energy museum to being a science center with an emphasis on energy, the nuclear age and the history of science. It now brings in the same array of traveling exhibits as other science centers; “The Robot Zoo” is there for the summer of 2003.

The museum has an annual attendance of 126,000 and is operated by a staff of 13 FT, 5 PT and 52 volunteers.



Figure 47. American Museum of Science and Energy. Source: web site.

In 2000 UT-Batelle, which manages Oak Ridge National Laboratory for the DOE, recommended that ownership of the museum be transferred to the City of Oak Ridge. At the end of 2002, after a consultant study, the city, while desiring the transfer, determined that it does not have the funds to accept it. However, at the February 17, 2003, City Council meeting, a resolution was adopted approving the transmittal of “A Proposal by the City of Oak Ridge, Tennessee to the United States Department of Energy to Convey the American Museum of Science and Energy and Associated Property.” The Atomic Heritage Foundation is very interested in being part of this conveyance, with the expectation that the name will change to the Manhattan Project Heritage Museum and it will serve as a depository for Manhattan Project artifacts along with the science and technology exhibits and programs.



Figure 48. American Museum of Science and Energy. Source: web site.

Relevance

This is an example of a DOE-sponsored museum which has had difficulty finding its real mission and which is a demonstration that operating cultural and educational facilities is not a strength of the Department of Energy or its contractors. It is affirmation of the importance of the independent nonprofit status of the Rocky Flats Cold War Museum.

Regional Laboratories and Consortia

Several facilities located in the Boulder-Golden corridor, flanking Rocky Flats on the north and south, have programs which complement those of the RFCWM, and some have existing visitor attractions.

National Renewable Energy Laboratory Visitor Center

This is a 6,400 square foot facility located at the base of South Table Mountain in Golden, adjacent to the NREL research laboratories. It includes indoor and outdoor exhibits and public programming and demonstration spaces. It interprets passive solar energy technologies, energy-efficient lighting, and ways to minimize energy costs and environmental impact. The building itself is a model for energy-efficient design.



Figure 49. National Renewable Energy Laboratory Visitor Center. Source: ILE photo.

Current programs include self-guided tours, renewable energy programs for grades 4-6, scout and community groups, a Young Scholars program for grades 7-12, a Collegiate program, and a variety of adult programs.

It attracts about 12,000 visitors per year, both as individual drop-ins and as organized groups. Together with the Coors brewery, it is reason for bus tours to make a “technology” stop in Golden. It also works with the Denver Museum of Nature and Science and the organizers of Denver conventions and conferences to provide assembly spaces. Further, it hosts meetings of outside groups, such as the Colorado Renewable Energy Society, a trade association.

Relevance

Many of the NREL Visitor Center’s audiences are similar to those that will be interested in Rocky Flats. Further, its researchers are available to assist RFCWM develop an energy-efficient facility. The NREL Visitor Center could be part of the Front Range Tech Tour.



Figure 50. Visitor Center exhibits. Source: ILE photo.

National Wind Technology Center (NREL)

The National Wind Technology Center is adjacent to the northwest corner of the Rocky Flats Environmental Technology Site. Its property was originally part of the expanded Rocky Flats, but since 1977 has been managed as a separate research facility with no direct relationship with Rocky Flats.

It currently has no public facilities or advertised public education or interpretation program. Nonetheless, its conspicuous presence (the windmill farm) plus great public and political interest in alternative energy sources, places regular demands on it for tours and interpretation.

Relevance

A site at the entrance to the NWTC is a possible location for the RFCWM. The museum could provide an important service to the NWTC by developing interpretive programming which includes the wind energy research efforts plus the natural advantages of locating the test site where it is. In an ironic fashion, this amplifies some of the historic concerns about airborne materials being carried from Rocky Flats toward the northwest suburbs and Denver itself in the event of accidents at the production facility and/or wind-released soil particles.

National Center for Atmospheric Research

The NCAR public Visitor Center is located in the signature I.M. Pei building on Table Mesa Drive, southwest of Boulder. This striking facility houses both research and administrative offices as well as the Visitor Center. NCAR is a collaborative of research universities which also carries out research sponsored by various federal agencies, including DOE and others.



Figure 51. I.M. Pei-designed NCAR building. Source: ILE photo.

The Visitor Center has just been completely redone, reopening after a six-month shutdown on June 16, 2003. The new exhibits illustrate NCAR's own research and the processes behind weather and climate. Some of the exhibits were designed by the Exploratorium in San Francisco.

The Visitor Center is connected with the outdoors, as the NCAR site is a nature preserve connected with the Walter Orr Roberts Nature and Weather Trail (wheelchair accessible) and other Front Range hiking trails.

Historically, according to staff, the facility has received about 14,000 youth in organized groups and 80,000 general visitors. This is a VERY strong number, given the off-the-beaten-path location and generally arcane nature of the subject matter studied at NCAR. The visibility of the building from the Boulder Valley certainly has something to do with this high visitorship. Sign-in books also indicate that NCAR is indeed a destination site.

Relevance

The NCAR facility is part of the interesting array of technology/research facilities on the Boulder-Golden Corridor. There is interest in coordinating with the RFCWM. NCAR also has a long history of good public education and exhibits and will make an excellent collaborator with the RFCWM.

National Institute of Standards and Technology

NIST has a facility in South Boulder which historically has offered a modest array of public programs related to the agency's mission. However, since 9/11, and especially during Code Orange alerts, there has been no public access to the facilities which include panel displays and a seminar room for public discussions of NIST work.

The NIST facility was not heavily visited even in the best of times, but it does have some interesting stories and examples of measurement science and the necessity of national and international measurement standardization.

Relevance

There is interest on the part of the Director of the NIST facility in developing interpretive programs in conjunction with the RFCWM and potentially being a part of the proposed Front Range Tech Tour.

Selected Denver Region Comparable Museums and Cultural Organizations

Here this report briefly describes a small sample of the wide array of educational, scientific and cultural facilities and attractions currently available to metro Denver residents and their visitors. This is by no means comprehensive, but rather is intended to indicate that the diversity of current opportunities does not include anything approximating the proposed Rocky Flats Cold War Museum and adjacent outdoor FWS-managed interpretive areas. Many other facilities are listed in Appendix 10.

Arvada Center for the Arts and Humanities

This elaborate complex on Wadsworth Road in the northern part of Arvada provides facilities for a broad array of musical, theatrical and community activities. It also houses the collections and display facilities of the Arvada Historical Society. Opened in 1976, it doubled in size in 1992 (now over 100,000 square feet) hosting over 275,000 patrons in 1999. Another expansion is on the horizon.

Arvada Center for the Arts and Humanities programs—in addition to the small history museum (which does not address anything close to Rocky Flats)—include a variety of art shows, both traditional and contemporary, local musical and theatrical groups, a wide variety of school programs and studio/stage experiences for students, nationally-known performers, various fundraisers, opportunities for people with various physical and mental challenges, and a presentation by the Director of the National Endowment for the Humanities. It is a fully recognized, equity regional theater.



Figure 52. Arvada Center for the Arts and Humanities. Source: web site.

Relevance

The success of the Arvada Center for the Arts and Humanities is excellent indication of the ability of Denver's northwest suburbs to support high-quality, self-sustaining cultural, artistic and educational facilities.

Butterfly Pavilion

Westminster's Butterfly Pavilion is a striking example of a successful partnership between a community and unique educational visitor attraction. The ability of the Butterfly Pavilion to be located within a major economic development zone (although the construction of a car dealership closer to Highway 36 largely obscures it from passing traffic) was a significant contributor to its initial success.

It also offered a unique product to the Denver market, one which was both environmentally-proper and esthetic. In this sense, the Butterfly Pavilion played to several critical human emotions.

Within a few years of its 1995 opening the Butterfly Pavilion outgrew its original 16,000 square foot facility. Attendance exceeds 130,000 annually. A phased 30,000 square foot addition has been planned. Staff have relocated to trailers to make more room for public activities.

It is a SCFD Tier two organization, receiving almost \$650,000 in the last reported distribution. Its most recent IRS 990 indicates an operating budget of almost \$1.9 million.

The Pavilion offers a broad array of programs, both on site and outreach. It has a working relationship with CU's Science Discovery for the CU Bugmobile.

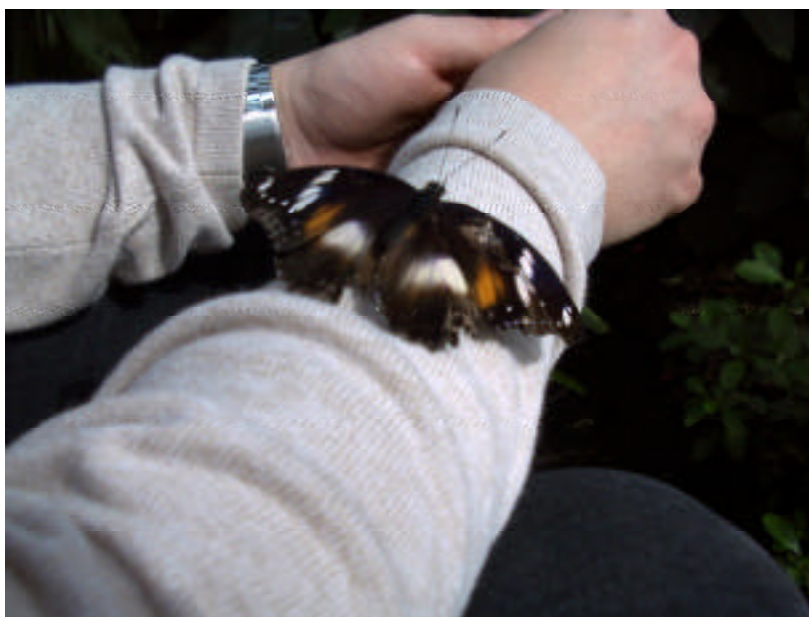


Figure 53. Up close and personal at the Butterfly Pavilion. Source: web site.

Relevance

New suburban attractions with specialized topics can be successful. However, support from local municipalities and the SCFD are a major part of that success. Unfortunately, the current economy, combined with issues related to the development within which the Butterfly Pavilion is located, have handicapped its desperate need for an expanded facility. The expansion is on hold.

Colorado Historical Society

The flagship operation of the Historical Society is the downtown Denver museum, located in the Denver cultural district. It is across the street from the Denver Public Library, one block from the Denver Art Museum, and close to the State Capitol.

Rocky Flats Cold War Museum

The museum has 36,000 square feet of exhibits, and serves almost 400,000 visitors annually with a staff of 103 FT, 15 PT and 850 volunteers. Its annual budget is almost \$7,000,000.

Its exhibitions are both chronological and topical, but generally quite traditional in style and approach.

In addition to the exhibits and activities at and emanating from the Denver museum, the Historical Society maintains and operates eleven historic sites and facilities across the state.

The State Office of Archeology and Historic Preservation is housed in the Historical Society. It provides support to state organizations seeking to inventory archeological and historic resources, and to assess and stabilize structures such as those at Lindsay Ranch.

Relevance

The Society has extensive collections, including artifacts and documents, which can help to interpret the 19th and early 20th century ranching and mining history of the Rocky Flats region. Its Cold War era holdings are very modest.

Denver Museum of Nature and Science

DMNS is the largest educational attraction in the state. Located in Denver's City Park, with a spectacular view of the Front Range, the 350,000 square foot museum attracts over a million visitors annually. As a Tier I institution, its \$31 million budget includes over \$7 million in SCFD funding.

It has extensive collections of Colorado natural history and anthropology, and various of its staff members have conducted research on plants and animals which currently do or historically have occurred at Rocky Flats. It has been used as a resource for identification of materials from Rocky Flats; a subrecent horse specimen located in a Rocky Flats excavation was identified by the museum.

Relevance

In mid-June of 2003 the DMNS opened a \$50 million expansion and renovation project—the Leprino Family Atrium, the renovated Gates Planetarium, and the 13,000 square foot Space Odyssey astronomy exhibition gallery. The museum clearly demonstrated that, even in a weak economy, the Denver area will support well-configured capital fundraising campaigns.

Littleton Historical Museum

The Littleton Historical Museum has the largest attendance of all the local history museums in the metropolitan area at 105,000. Located on 14 acres in Littleton's Ketring Park, it includes a collections center, three exhibition galleries and a research library in the museum building, and two living history farms, representing the 1860s and the 1890s.

A department of the City of Littleton, the museum is staffed by twelve FT, nine PT and 50 volunteer staff, including several who do costumed interpretation.

Relevance

This is a successful small museum. Because it does not deal with 20th Century history, there may be partnering opportunities (even though Rocky Flats is not in the City of Littleton).



Figure 54. 1860s Pioneer farm. Source: web site.



Figure 55. 1890's Pioneer Farm. Source: web site.

Colorado's Ocean Journey

This organization, in business only three years, has created a great deal of interest recently as its financial problems became public knowledge and it recently was sold to a for-profit business.

Ocean Journey opened in 1999; it had been built at a cost of \$93 million and attracted over 900,000 guests in its first six months. By mid-2001 it was deep in debt and filed for bankruptcy in April 2002. In March 2003 it was sold to Landry's Restaurants for \$13.6 million.

Ocean Journey is a full-service aquarium with several major themed exhibits, a large collection of both aquatic and terrestrial animals and plants, and a large educational program. Its operating budget is about

\$18,000,000 and in 2000 it had a staff of 112 FT, 6 PT and 700 volunteers which served a rapidly declining attendance (562,000 in 2002). It is by far the largest financial failure in the aquarium world.



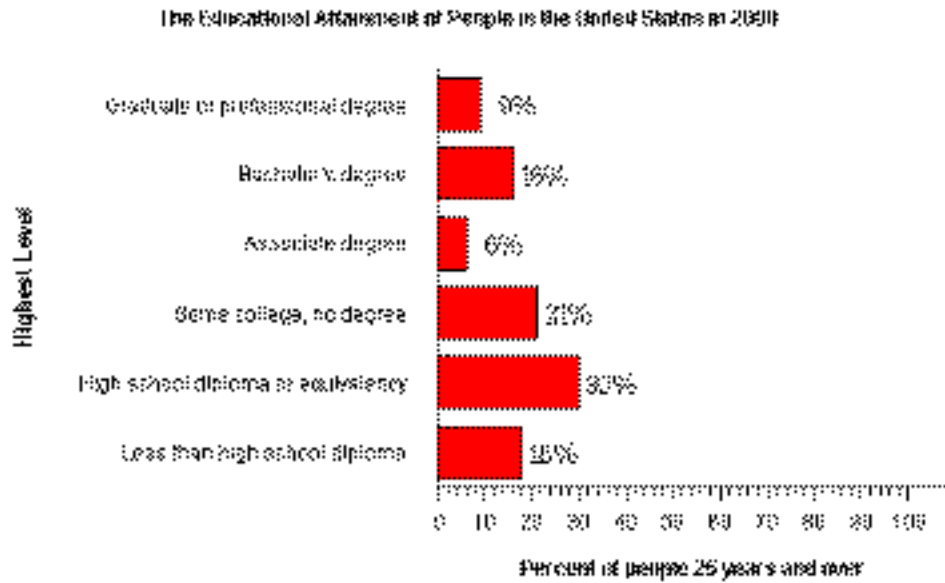
Figure 54. Colorado's Ocean Journey: Source: ILE photo.

Relevance

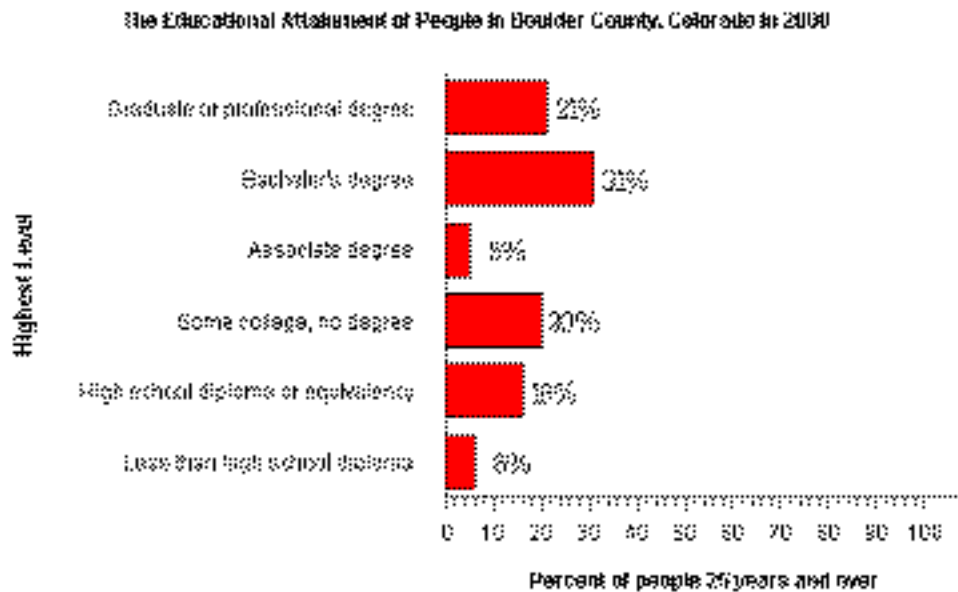
The Ocean Journey story is a very important case study for newly-formed educational attractions. Its failure is not due to inadequate exhibits or programs (though a program of changing exhibits and programs would have helped), but rather to a poor business plan and inadequate oversight by both its board and its lenders. The \$93 million capital cost included \$57 million in revenue bonds which required an annual payment of \$4.2 million starting in 1997 and extending through 2026. This was not possible; the facility simply could not generate that kind of excess revenue.

The lesson from Ocean Journey is that careful attention must be paid to the balance between revenue and expenses and a nonprofit organization should not be burdened by debt.

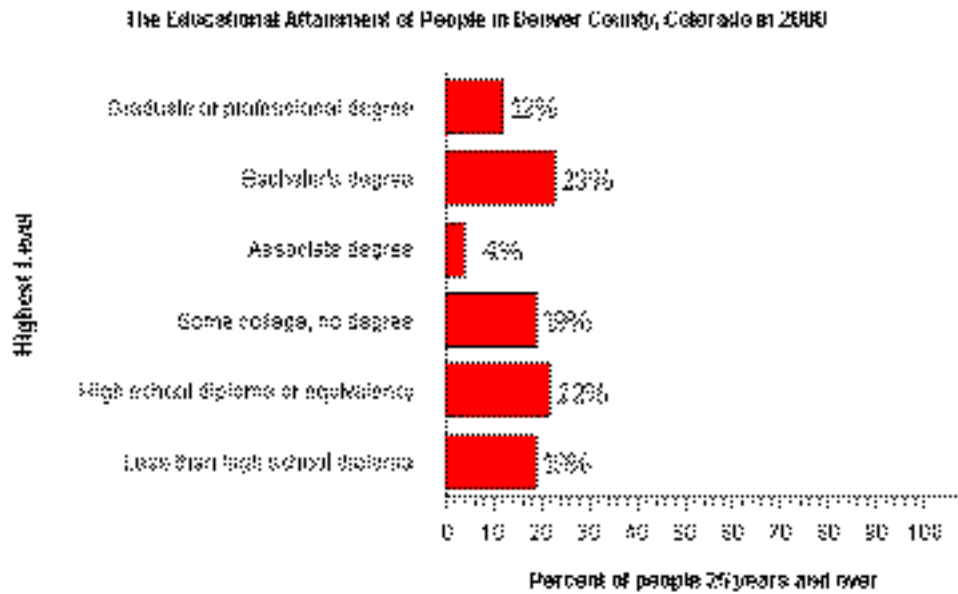
Appendix 3. Education by County (detail)



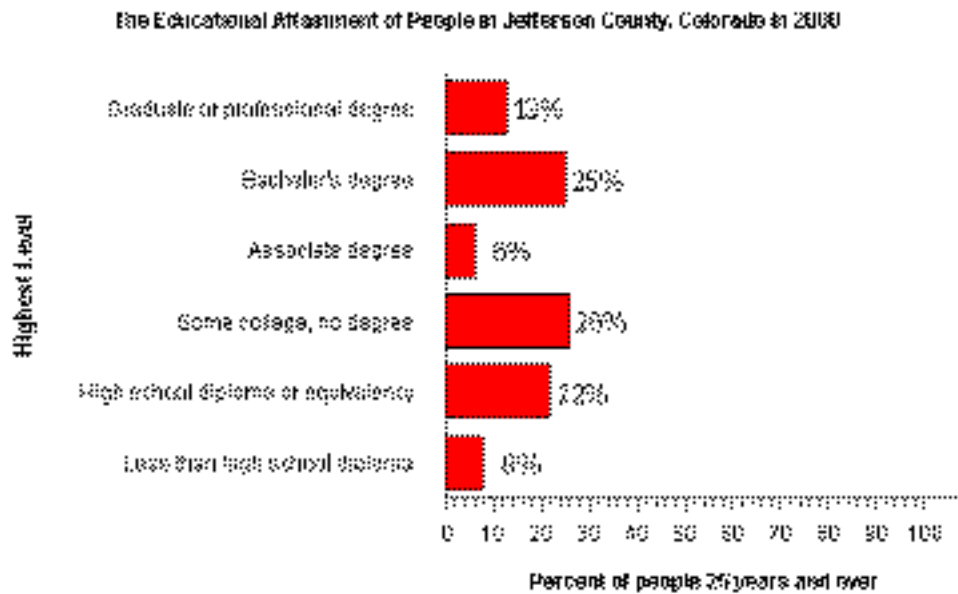
Source: Census 2000 Supplementary Survey



Source: Census 2000 Supplementary Survey



Source: Census 2000 Supplementary Survey



Source: Census 2000 Supplementary Survey

Appendix 4. Capital Expenses

37.4 New Building, Expansion, Renovation Expenses by Segment						
	New building		Expansion		Renovation	
	Median	Median/sq.ft	Median	Median/sq.ft	Median	Median/sq.ft
Overall	\$2,200,000	\$205	\$1,190,000	\$172	\$600,000	\$91.21
Discipline						
Arboretum/ Botanic Garden	\$750,000	\$398	\$745,000	\$34.10	\$775,000	\$73.35
Art Museum	\$10,400,000	\$277	\$2,803,300	\$245	\$1,990,540	\$103
Children's/ Youth Museum	\$1,632,500	\$27.49	\$3,600,000	\$172	\$6,000,000	\$130
General Museum	\$17,076,350	\$280	\$830,000	\$357	\$400,000	\$75.35
Historic Home/ Site	\$501,849	\$226	N/A	N/A	\$365,000	\$142
History Museum/ Historical Society	\$900,000	\$149	\$742,433	\$137	\$288,900	\$70.00
Natural History/ Anthropology	N/A	N/A	\$8,850,000	\$204.52	\$917,500	\$176.67
Nature Center	\$1,450,650	\$160	\$125,000	\$500	\$176,729	\$273
Science/ Technology Center/Museum	\$9,100,000	\$364	\$1,700,000	\$214	\$1,281,984	\$74.06
Specialized Museum	\$4,170,000	\$178	\$526,000	\$133	\$200,000	\$66.38
Zoo	\$2,200,000	\$235	\$1,291,937	\$559	\$990,500	\$66.05
Budget Size						
Under \$180,000	\$640,000	\$96.00	\$169,055	\$62.70	\$76,704	\$24.28
\$180,000- \$750,000	\$765,000	\$149	\$721,217	\$152	\$337,500	\$130
\$750,001- \$2,500,000	\$5,362,500	\$250	\$980,000	\$158	\$992,000	\$100
Over \$2,500,000	\$6,376,350	\$298	\$5,087,500	\$400	\$2,641,855	\$131

Source: American Association of Museums

Appendix 5. Revenue Sources

20.3 Funding Sources by Segment				
(all data are mean values)	Government	Private	Earned	Investment
Overall	25%	35%	30%	11%
Discipline				
Arboretum/Botanic Garden	15%	34%	29%	21%
Art Museum	17%	46%	24%	15%
Children's/Youth Museum	16%	36%	45%	3%
General Museum	32%	31%	27%	11%
Historic Home/Site	22%	29%	39%	12%
History Museum/Historical Society	34%	30%	26%	10%
Natural History/Anthropology	51%	29%	16%	5%
Nature Center	30%	21%	44%	4%
Science/Technology Center/Museum	25%	27%	44%	5%
Specialized Museum	18%	43%	32%	7%
Zoo	33%	19%	48%	1%
Budget Size				
Under \$180,000	27%	39%	26%	8%
\$180,000-\$750,000	29%	31%	31%	9%
\$750,001-\$2,500,000	25%	37%	30%	9%
Over \$2,500,000	21%	31%	33%	16%
Governance				
Government	63%	16%	19%	2%
College/University	35%	47%	9%	10%
Private nonprofit	16%	38%	35%	13%

Source: American Association of Museums

Appendix 6. Revenue Sources

21 Income Sources			
	Receive or have	Do not receive/have	No response
Contributed revenue			
Federal government	29.8%	66.6%	3.6%
State government	54.0%	42.8%	3.2%
Local government	50.2%	45.4%	4.3%
Tribal government	1.2%	93.4%	5.3%
Community foundations	63.3%	30.0%	6.7%
Corporate foundations	37.1%	54.2%	8.7%
Corporations	52.9%	40.2%	6.9%
Donations from individuals	84.4%	11.0%	4.6%
Have a parent organization	23.8%	72.3%	3.8%
Funding from parent organization	77.1%	15.1%	7.8%
Have a support organization	21.8%	72.8%	5.3%
Funding from support organization	76.7%	19.9%	3.4%
Fund-raising events	58.9%	37.0%	4.1%
Earned revenue			
General admission fees	60.5%	37.7%	1.7%
Investments (other than endowment)	37.1%	54.5%	8.4%
Special exhibitions	10.5%	84.9%	4.6%
Membership fees	78.9%	17.2%	3.8%
Program/education fees	57.7%	37.6%	4.7%
Royalties	23.1%	72.5%	4.5%
Facility rental	59.4%	37.3%	3.2%
Fairs/festivals	35.6%	60.9%	3.5%
Specific sources			
Museum store	83.0%	14.6%	2.4%
On-site food services	24.7%	72.5%	2.9%
IMAX/OMNIMAX theater	3.2%	94.3%	2.5%
Endowment	62.2%	34.7%	3.1%

Source: American Association of Museums

Appendix 7. Revenue Sources by Type, Budget and Governance (summary)

	Government	Private	Earned	Investment
Museums overall	25%	35%	30%	11%
History Museum	34%	30%	26%	10%
Science Museum	25%	27%	44%	5%
\$750,000-\$2,500,000	25%	37%	30%	9%
Private nonprofit	16%	38%	35%	13%

Source: American Association of Museums, 2003 Museum Financial Information

Appendix 8. Revenue Sources, Comparably-Sized Science Museums

	Total	Earned	Public	Private
Lakeview Museum of Arts and Sciences	\$1,455,000	\$760,000	\$550,000	\$130,000
MIT Museum	\$1,307,749	\$448,747	N/A	\$873,791
Museum of Science & History, Jacksonville	\$1,484,622	\$1,031,619	\$463,533	\$47,464
Roberson Museum & Science Center	\$1,527,100	\$589,200	\$137,041	\$602,409
SciWorks	\$1,460,000	\$528,200	\$795,000	\$91,000
ASTC Median	\$2,590,973	\$1,253,725	\$487,099	\$452,723

Source: ASTC Sourcebook of Science Center Statistics, 2001

Appendix 9. Attributes of Nuclear Museums

Museum	Location	Phone	Web	Governance
American Museum of Science & Energy	Oak Ridge, TN	865.576.3200	http://www.amse.org	Federal: Oak Ridge National Laboratory
Atomic Testing Museum	Las Vegas, NV	702.862.5460	http://www.ntsrf.org	Nevada Test Site Historical Foundation/DRI
Bradbury Science Museum	Los Alamos, NM	505.665.3339	http://www.lanl.gov/museum/	Federal: Los Alamos National Laboratory
Columbia River Exhibition of History, Science & Technology	Richland, WA	509.943.9000	http://www.crehst.org/	Private foundation
National Atomic Museum	Albuquerque, NM	505.284.3243	http://www.atomicmuseum.com	Federal: Sandia National Laboratories

Museum	Total sf	Public sf	Exhibits sf	FT Staff	PT Staff	Vol Staff	Govt Contribs	Sale of Goods	Cost of Goods	Operating Expenses	Salaries
American Museum of Science & Energy				13	5	52					
Atomic Testing Museum	13,000		10,000	5		100				\$800,000- \$1,200,000	
Bradbury Science Museum		8,294	6,625	8	13					\$1,121,000	
Columbia River Exhibition of History, Science & Technology				2	8	25					
National Atomic Museum				14	4	65					

Museum	Facilities	Annual Attendance	Adult	Admission Child	Senior	Membership Indiv	Family
American Museum of Science & Energy	312-seat auditorium; demonstration areas; lab classroom; gift shop; computer lab	126,000	3.00			15.00	30.00
Atomic Testing Museum	shared theater; gift shop; shared collection storage	70,000(e)	8.00	4.00			
Bradbury Science Museum	research hall; theater	92,046	0.00	0.00	0.00		
Columbia River Exhibition of History, Science & Technology	50-seat auditorium; gift shop	8,603	3.50	2.50	2.75	25.00	40.00
National Atomic Museum	library; theater; gift shop	80,000	4.00	3.00	3.00	25.00	50.00

Rocky Flats Cold War Museum

Museum	Adult Programs	After-School Programs	Birthday Parties	Changing Exhibitions	City walking & bus tours	Dinner and movie	Distance Learning	Elementary School Programs	Facility Rental	Family Programs	Festivals	First-Person/Costumed Interpreters	Home-School Programs	Internships	Lecture Series	Museum Club	Object Theater	Outreach to Schools	Pre- and Post-Visit Materials	Preschool Programs	Rental/Outreach Kits	School Tours	Scout/4H Programs	Senior Programs	Senior Tours	Sleepovers/Camp-ins	Special Events	Summer Camps	Teacher Training/Materials	Teen Programs	Travel/Trips	Traveling Exhibitions	Web Programming
American Museum of Science & Energy									x	x					x			x					x						x			x	
Atomic Testing Museum																																	
Bradbury Science Museum																		x				x					x						
Columbia River Exhibition of History, Science & Technology				x											x			x											x				
National Atomic Museum																																	

Appendix 10. Attributes of Denver-Area Museums

Museum	Location	Phone	Web	Governance
Arvada Center for the Arts and Humanities	Arvada	303.431.3080	http://www.arvadacenter.org/index.php	Municipal: city of Arvada
Aurora History Museum	Aurora	303.739.6660	http://www.aurora-museum.org	Municipal: city of Aurora
Boulder History Museum	Boulder	303.449.3464	http://www.boulderhistorymuseum.org/	Boulder Historical Society
Butterfly Pavilion	Westminster	303.469.5441	http://www.butterflies.org/	Rocky Mountain Butterfly Consortium
Children's Museum of Denver	Denver	303.433.7444	http://www.cmdenver.org/	Non-profit
Collage Children's Museum	Boulder	303.440.0053		Private non-profit
Colorado Historical Society	Denver	303.866.3682	http://www.coloradohistory.org/	State of Colorado
Colorado School of Mines Geology Museum	Golden	303.273.3823	http://www.mines.edu/academic/geology/museum/index.html	State of Colorado: Colorado School of Mines
Denver Botanic Gardens	Denver	720.865.3500	http://www.botanicgardens.org/pageinpage/home.cfm	City & county of Denver
Denver Museum of Nature & Science	Denver	303.370.6387	http://www.dmns.org	Private non-profit
Golden Pioneer Museum	Golden	303.278.7151	http://www.goldenpioneermuseum.com/	Municipal: city of Golden
Lakewood's Heritage Center	Lakewood	303.987.7000	http://www.lakewood.org/index.cfm?&include=/Culture/heritagecenter.cfm	Municipal: city of Lakewood
Littleton Historical Museum	Littleton	303-795-3950	http://www.littletongov.org/museum/	Municipal: city of Littleton
Longmont Museum & Cultural Center	Longmont	303.651.8374	http://www.ci.longmont.co.us/museum/	Municipal: city of Longmont
Museo de las Americas	Denver	303-571-4401	http://www.museo.org/	Private non-profit
Ocean Journey	Denver	303.561.4450	http://www.oceanjourney.org/	
Plains Conservation Center	Aurora	303.693.3621	http://www.plainsconservationcenter.org/	West Arapahoe Soil Conservation District
University of Colorado Museum	Boulder	303.492.6892	http://cumuseum.colorado.edu/	University of Colorado

Rocky Flats Cold War Museum

Museum	Public sf	Exhibits FT sf	Staff PT	Staff	Vol Staff	SCFD Contribs	Govt Contribs	Sale of Goods	Cost of Goods	Operating Expenses	Salaries
Arvada Center for the Arts and Humanities						1,048,157					
Aurora History Museum						62,569					
Boulder History Museum		4,000	4	2	25	15,000	36,541	7,161	4,122	1,155,914	180,021
Butterfly Pavilion						642,748	900,929	612,530	296,255	1,873,052	705,625
Children's Museum of Denver			29	8	770	524,838	499,838	75,800	36,863	2,183,065	1,067,536
Collage Children's Museum		3,500	5	4	150		109,495	4,875	4,339	363,059	160,226
Colorado Historical Society		36,000	103	15	850		2,203,223	0	0	6,764,883	3,380,238
Colorado School of Mines Geology Museum			1	12	1						
Denver Botanic Gardens			100	20	645	3,426,838	4,908,530	514,210	266,356	11,385,393	0
Denver Museum of Nature & Science	350,000	300,000	248	250	1500	7,439,043	8,912,524	3,954,986	1,740,221	31,356,889	0
Golden Pioneer Museum			2	1	20	11,300	75,465	0	0	135,684	68,067
Lakewood's Heritage Center			7	2	60						
Littleton Historical Museum			12	9	50						
Longmont Museum & Cultural Center		5,361	8	4	65	10,300					
Museo de las Americas			7	1	24	35,000	225,000	24,608	14,710	714,864	194,845
Ocean Journey							0	0	0	18,317,561	4,032,757
Plains Conservation Center			5	7	20						
University of Colorado Museum			12	8	80						

Rocky Flats Cold War Museum

Museum	Facilities	Annual Attendance	Admission			Membership	
			Adult	Child	Senior	Indiv	Family
Arvada Center for the Arts and Humanities	500-seat auditorium; exhibit space; classrooms	12,500	0.00	0.00	0.00	40.00	
Aurora History Museum		15,164	0.00	0.00	0.00	15.00	25.00
Boulder History Museum		7,000	3.00		2.00	35.00	50.00
Butterfly Pavilion		130,000	6.95	3.95	4.95	30.00	40.00
Children's Museum of Denver	research center	173,120	6.50	6.50	3.50	40.00	60.00
Collage Children's Museum	party room; gift shop	37,000	3.50	3.50	1.75		50.00
Colorado Historical Society	library; reading room; classrooms; 400-seat auditorium; gift shop	371,345	5.00	3.50	4.50	40.00	50.00
Colorado School of Mines Geology Museum		12,000	0.00	0.00	0.00		
Denver Botanic Gardens	library & herbarium; 350-seat auditorium; classrooms; research lab; gift shop	485,881	5.50	4.00	3.50	35.00	65.00
Denver Museum of Nature & Science	library; archives; IMAX theater; planetarium; café; gift shop	1,346,457	8.00	5.50	5.50	35.00	65.00
Golden Pioneer Museum	archive; gift shop	15,091	0.00	0.00	0.00	30.00	30.00
Lakewood's Heritage Center	Visitor ctr (Oct 2003); 10 historic structures; outdoor amphitheater; gift shops	45,238	0.00	0.00	0.00	40.00	60.00
Littleton Historical Museum	library; archives	105,000	0.00	0.00	0.00		
Longmont Museum & Cultural Center	classrooms; archives; gift shop	50,589	0.00	0.00	0.00	25.00	35.00
Museo de las Americas	gift shop	65,000	3.00	1.00	2.00	25.00	40.00
Ocean Journey	Aquarium and live animal displays; playground; motion-simulator ride; gift shop		14.95	6.95	12.95		
Plains Conservation Center		20,000	5.00			20.00	30.00
University of Colorado Museum		34,164	0.00	0.00	0.00	25.00	45.00

Rocky Flats Cold War Museum

Museum	Adult Programs	After-School Programs	Birthday Parties	Changing Exhibitions	City walking & bus tours	Dinner and movie	Distance Learning	Elementary School Programs	Facility Rental	Family Programs	Festivals	First-Person/Costumed Interpreters	Home-School Programs	Internships	Lecture Series	Museum Club	Object Theater	Outreach to Schools	Pre- and Post-Visit Materials	Preschool Programs	Rental/Outreach Kits	School Tours	Scout/4H Programs	Senior Programs	Senior Tours	Sleepovers/Camp-ins	Special Events	Summer Camps	Teacher Training/Materials	Teen Programs	Travel/Trips	Traveling Exhibitions	Web Programming
Arvada Center for the Arts and Humanities	x		x					x	x	x				x									x				x	x					
Aurora History Museum			x	x			x	x				x								x			x				x		x				
Boulder History Museum												x																					
Butterfly Pavilion	x						x	x										x					x					x	x				
Children's Museum of Denver									x											x								x					x
Collage Children's Museum																																	
Colorado Historical Society	x						x	x					x	x							x	x			x		x	x					
Colorado School of Mines Geology Museum																						x											
Denver Botanic Gardens	x						x	x	x	x				x								x	x	x			x	x	x				
Denver Museum of Nature & Science	x		x	x			x	x	x	x			x	x													x		x		x		
Golden Pioneer Museum			x																														
Lakewood's Heritage Center	x		x	x				x	x	x																	x						
Littleton Historical Museum											x	x															x	x					
Longmont Museum & Cultural Center	x		x				x					x		x								x						x					
Museo de las Americas							x															x				x							
Ocean Journey	x								x				x									x						x	x				
Plains Conservation Center											x								x				x					x	x				
University of Colorado Museum			x				x	x						x	x							x	x						x			x	

Appendix 11. Trends in the Museum Field

Following is a selective overview of trends in the museum industry today, and highlights from recent research concerning the museum visitor experience. The trends in the field and research on the visitor's experience are then applied to the proposed development of the Rocky Flats Cold War Museum.

Successful museums incorporate an “icon” experience—one highly memorable exhibit, object or program—with intimate, highly interactive exhibits and programs, rotating temporary exhibitions, “value-added” programming, and personal attention to guests. All of these strategies combine to attract larger audiences and encourage repeat visitation.

“Icon” Exhibition Experiences

Classic “icon” exhibition experiences in museums are significant attractions that are drawing forces that attract new audiences. Examples include the dinosaurs at the Denver Museum of Nature and Science, Primate Panorama at the Denver Zoo, and the regular changing exhibitions at the Denver Art Museum. At the Rocky Flats Cold War Museum, the “icon” experience might very well be the reconstructed glove box line.

Interactive, Educator-led Exhibits

Museum research verifies that visitors respond to people better than to things. Many museums are increasing staff (both volunteer and paid) to expand the points of contact with visitors and are developing exhibits and activities which incorporate human resources into the visitor experience.

Interactive, educator-led exhibits bring audiences for repeat visits. Museums have used this technique successfully. One particularly good example is Science North, located in Sudbury, Ontario, a city of 200,000 located four hours north of Toronto. Science North incorporates relatively modest, highly engaging “tabletop” exhibits and demonstrations in learning labs and attracts over 300,000 visitors per year.

Another example is the Chicago Children's Museum, situated at Navy Pier in Chicago. Its small interactive exhibit elements as well as staff-led activities attract large numbers of repeat visitors, up to 300,000 per year.

Special Events

Institutions also have had great success in generating significant attendance for special events (e.g., the Pacific Science Center's Bubble Festival, antique shows at the Adirondack Museum and the Maryland Historical Society, seasonal celebrations, significant anniversaries and reenactments of historic events). Extensive marketing efforts generally are necessary to ensure high attendance. The Rocky Flats Cold War Museum will have to be judicious in developing a special events program.

Evaluation and Assessment

Museums now are paying much attention to assessing the appropriateness of their programs for their visitors and evaluating the success of exhibitions and programs at accomplishing their educational and social goals. Funders are increasingly interested in the results of their projects, thereby increasing the need for museums to be accountable. Museums are developing a variety of techniques for assessing their success (e.g., Diamond, 1999).

Museum Without Walls

Museums are reaching beyond their own doors to create facilitated programs and exhibitions that are displayed in off site facilities. Many museums recognize the limits of restricting their programs to their own sites and are reaching their audiences in many creative ways. While the museum facility is required

to house objects and activities that cannot move and are the attractions for a visit, many structured and semi-structured educational activities can occur off-site. Examples include van and other outreach programs provided by many museums, such as the Pacific Science Center, the Vancouver Public Aquarium, and the Natural History Museum of Los Angeles County.

Temporary/Traveling Exhibitions

Museums are devoting increasing efforts to regular changes in their exhibition and program offerings, thus encouraging repeat visits, especially from their local and regional audience. Temporary shows can be rented (see ILE's Traveling Exhibitions Database), developed collaboratively with other institutions, or produced independently taking advantages of local collections and expertise (West and Runge, 2003; Sixsmith, 1995).

Awareness of the Outdoors

Many museums are extending themselves into the outdoors architecturally and programmatically. Museum architects are incorporating controlled natural light and views to and from the outside into exhibit halls. The current proposal for the Rocky Flats Cold War Museum includes numerous outdoor experiences.

Audience Diversity Efforts

Museums of all types are seeking to diversify their audiences and support bases by broadening and diversifying their programs and activities. This requires in-depth understanding of target audiences, their cultural history, environmental conditions and social factors. This is especially true for museums trying to reach culturally specific populations that do not traditionally attend museums in large numbers (Falk, 1993).

The Visitor Experience

Museums are a growth industry. In the November/December 1998 issue of *Museum News* (“The Boom and What to Do About It,” Jane Lusaka and John Strand, pp. 55-60), it is estimated that 865 million visits were made to all types of American museums in 1998, probably the highest number ever.

Much of the expansion in attendance can be attributed to the remarkable expansions of existing institutions and the proliferation of new specialty, science and youth museums and historic preservation efforts. This is evident in metropolitan Denver with the imminent expansion of the Denver Art Museum, the new Space Odyssey exhibit at the Denver Museum of Nature and Science, and the success of the Butterfly Pavilion.

In recent years, there have been several useful summaries of research on how visitors’ knowledge, interests, and motivations, and the museum environment itself affect the visitor experience. (Particularly good reviews are contained in *The Museum Experience*, John Falk and Lynn Dierking, 1993; *Informal Science Learning*, Valerie Crane, Editor, 1994; and *Learning in the Museum*, George Hein, 1998). Findings from these reviews and experiences of visitors in many museums are summarized below. The evidence suggests that museum visits do not necessarily provide people with deeper conceptual understanding of information but rather often lead to an increased desire to learn as a result of the lasting images, impressions and powerful experiences. The visitor is inspired to acquire new educational tools and to explore the world in new ways. The research strongly indicates that the key success factors for a museum visit are:

- A pleasant, educational, social, and recreational visit;
- A comfortable physical environment with adequate visitor amenities;
- A range of experiences that meet individual needs and interests;
- Positive interactions with museum staff;
- Real and unusual experiences;
- Fun and excitement; and
- “Icon” experiences

Although experiencing large-scale, new, and unusual phenomena are important factors in capturing the interest of visitors, recent research on learning also suggests that prior knowledge and familiarity with a topic are related to successful museum visits as well.

Key Qualities of Museum Visits and Museum Visitors

People come to museums for “real” experiences. Visitors come to see real objects (e.g., cultural or historic artifacts, living things, etc.) that are not typically encountered in everyday life or they come to experience real phenomena or processes (e.g., light, color, sound effects, try out new technology, etc.). These experiences, by their very nature, are memorable.

The typical visit averages between one and two hours. The duration of museum visits vary widely, from less than an hour to a half-day or more, with the median visit ranging from about one and one-half to two hours.

Visitors choose how to spend their time. Median stop times at interactive exhibit elements are under 3 minutes. Many visitors sample exhibits and activities, spend a few seconds at some elements, and return to favorite interactive exhibits to spend longer periods of time. A significant proportion of visitor time is spent in activities not directly associated with exhibits, including visiting the restroom, shopping at the gift shop, getting oriented, or conversing with one another about subjects unrelated to the visit. Museum visits are educational, social, and recreational experiences. While frequent museum visitors report that having an educational experience is a high priority in their visits, infrequent museum visitors place a higher priority on the recreational and social aspects of their visits. During their visit, both frequent and infrequent visitors are highly social, and enjoy frequent interactions amongst those they accompany to the museum.

Visitors’ prior knowledge and interests influence what they do during a visit. Visitors come to an informal educational setting with their individual interests, preconceptions (sometimes erroneous), and individual learning styles. The physical environment influences the visitor’s experiences. Colors, weather, seating, the ergonomics of interactive exhibits, the indoor or outdoor context, ease of movement from one space to another, and other physical dimensions of the learning environment impact the length of visit and choice of activity.

Most visitors develop awareness, not knowledge, during a visit. In most cases, visitors leave with ephemeral experience and not with a large body of new knowledge or information.

Icon exhibits can make a visit memorable. “Icon” experiences (e.g., the Museum of Science and Industry’s coal mine and submarine, the Star-Spangled Banner at the National Museum of American History, Washington, DC) are the most memorable aspects for most museum visits.

Volunteers and staff can make a visit more significant. Customer service is important: clean restrooms, easy way-finding, visitor amenities (including a good place to eat, comfortable seating areas, availability of stroller check in, etc.), and interactive exhibits that are working are all important for a successful visit. Personal interactions with staff and volunteers also make a lasting impression on visitors.

Museum-goers tend to be better educated and more affluent than the average population. A greater proportion of children between ages 5 and 12 and adults between ages 25 and 44 attend science museums than do other age groups. Older adults are more likely to attend art and history museums.

Visitors usually do not organize their world in the same categories curators and scholars use to organize museum exhibitions (i.e., visitors do not typically view history as an interrelated chronology; a historical object may evoke aesthetic feelings for one visitor and curiosity about its functions and uses for another).

Interactive/hands-on exhibits can support learning by helping visitors connect new information from the museum to familiar knowledge and experiences as a multi-sensory experience. This is especially important for children, who may bring a limited experience and information to an exhibit, but also is applicable to adult visitors when they are presented with unfamiliar topics.

Implications for the RFCWM

These findings regarding trends in museums and the visitor experience have a number of implications for the Rocky Flats Cold War Museum as it plans exhibitions, programs and budgets:

- The RFCWM should be sure to develop a major “icon” experience as a central element of its exhibition plan.
- The RFCWM’s exhibits should include components that are interactive and hands-on, emphasizing inquiry and problem-solving learning.
- Educator-led experiences should be incorporated into the regular program. Information should be presented within frameworks familiar to and interesting to visitors, so they can make connections between their experience and their own knowledge base.
- Museums and other informal learning institutions have had great success in increasing their local and regional audience (as well as tourists) through temporary exhibitions. There are many traveling exhibitions available on historical and technological topics, and the Atomic Heritage Society is proposing to develop specialized exhibitions. A modest dedicated space to host these exhibitions is proposed in the development plans.
- Since museum visits are social experiences, and engage participants of many ages, the RFCWM’s exhibits and programs should accommodate people with different learning styles and developmental levels. Cooperative learning should also be encouraged.
- The RFCWM should clearly identify high priority target audiences for specific types of programming and assess the specific needs and interests these audiences have for programs. Because of the location, targeted marketing and promotion efforts will be important
- The RFCWM must involve the various stakeholder groups in planning the new museum to assure that exhibits and programs meet the needs and interests of these audiences. It also must coordinate with the existing museums, heritage organizations, and outdoor education facilities to ensure that programs are complementary rather than competitive and redundant. Further, stakeholder groups should be involved in creation of the entire museum experience, not merely particular exhibitions.
- The RFCWM needs to set clear educational and participation-level goals in relation to specific programs. This requires development of a system of evaluating the effectiveness of specific programs and of tracking overall visitor satisfaction and learning. Hands-on and participatory programs are popular and successful, suggesting that the proposed interpretive focus of the RFCWM will be well received.
- The RFCWM should develop an effective outreach programming strategy that serves its educational and marketing goals; off-site programs should be developed in collaboration with other historical, technological and environmental organizations, as well as local schools and community organizations.
- The RFCWM’s location in the Boulder-Golden corridor, in close proximity to organizations and agencies with technology missions, offers opportunities for collaborative activities. For example, it might develop joint programming (the “tech tour”) with NREL, NWTC, NCAR, NIST, ITLL and others.
- The RFCWM should develop a comprehensive promotional and public relations strategy to increase awareness and inform key target audiences about the forthcoming museum development.
- The RFCWM should assure high quality visitor satisfaction in the new facility, which includes adequate comfortable visitor amenities, exhibits and programs that meet the specific needs of key target audiences, and sufficient numbers of trained staff members and volunteers to support guests.

The RFCWM needs to carefully plan its exhibitions and programs to suit needs of the local and regional visitors; the tourist market likely will contribute a modest part of the total participation. There are many leisure-time, entertainment and educational experiences in metropolitan Denver that compete for the visitors' time and are more readily accessible. The leisure-time landscape has become more cluttered than ever with both for-profit and non-profit attractions.

Understanding how the museum is perceived and used by the community among specific target audiences will be extremely important in ensuring successful exhibitions and programs. It will be important for the Rocky Flats Cold War Museum to develop a clear identity that is known by its target audience members. This identity should be both linked to and distinct from the other institutions. This will allow the Rocky Flats Cold War Museum to market its exhibits and programs effectively throughout the metropolitan region.