



Museums for America

Sample Application MA-10-14-0458-14
Project Category: Learning Experiences
Funding Level: \$25,001-\$150,000

Children's Museum of Denver

Amount awarded by IMLS:	\$150,000
Amount of cost share:	\$999,547

Attached are the following components excerpted from the original application.

- Abstract
- Narrative
- Schedule of Completion

Abstract

The Children's Museum of Denver respectfully seeks \$150,000 in IMLS funding to support the fabrication and installation of two new STEM exhibits that are part of a major Museum expansion set to open in late 2015. Our request aligns with the agency's special focus this year on advancing STEM learning. The Museum staff and board are grateful to IMLS for earlier funding that supported the schematic design and design development for exhibits in our expansion project.

The two STEM exhibits, ENERGY and WATER, are dynamic, play-based experiences that engage visitors and place them at the center of hands-on STEM learning. In ENERGY, we will inspire the next generation of energy innovators by allowing them to observe and interact with wind, solar and other fuel resources. In WATER, we will take children's natural fascination with this life-giving substance and extend it to scientific inquiry into the physical and sensorial properties of water.

In the Museum's expansion planning process, STEM learning was identified as a major concern, in Colorado and nationally. The children of the United States are falling behind those of other countries in STEM achievement. The National Academy of Sciences report, *Rising Above the Gathering Storm*, found that fewer than one-third of U.S. fourth-graders and eighth-graders performed at or above a proficient level in mathematics and only 15 percent of all U.S. undergraduates receive their degrees in natural science or engineering. In Colorado, 2013 standardized tests found that 34% of fifth-graders were less than proficient in math and 51% of fifth-graders were less than proficient in science. Proficiency scores were even lower for disadvantaged, at-risk students (lower income or ethnic/racial minorities).

Data such as these and the advice we sought from educators, community leaders, parents and children's advocates about evolving educational needs made us certain that STEM had to play a bigger role in our programming and exhibits. WATER and ENERGY are the result of that realization. The two STEM exhibits are centerpieces in an array of new experiences all addressing critical needs for early learners including exposure to the arts, enhancement of 21st century skills, the need for physical activity, an appreciation for the outdoors and the exploration of healthy foods.

Specifically, WATER and ENERGY will join the Museum's existing STEM exhibits – Bubbles and Kinetics! – to pique children's interest, build confidence and increase the likelihood children will pursue further STEM education and careers. Like all Museum exhibits, WATER and ENERGY will be configured to support 21st century skills, which have been identified as critical to success in a global economy. While new exhibits benefit all visitors to the Museum, our expansion plans also address the particular needs of at-risk students. We plan to expand by 47% our existing outreach program that provides free access to Museum experiences and programming for children from low-income schools. We will use a variety of evaluation tools including teacher surveys and visitor evaluations to ensure we are meeting our goals to inspire and educate children.

We are delighted to report that our capital campaign *Opening Doors for Young Minds: The Campaign for the Children's Museum of Denver* has raised more than \$12.7 million of the \$15.8 million we need to expand our program and exhibit space by more than 61,000 square feet (indoor and outdoor). We expect to move from the leadership gifts phase to the public phase later this year. If we are fortunate enough to receive an additional IMLS grant, the funds would support fabrication and installation of WATER and ENERGY from Nov. 1, 2014, through Oct. 31, 2015.

Narrative/Learning Experiences

1. Project Justification

What we will do: The Children's Museum of Denver is growing! As part of a major expansion opening in late 2015, we will add two high-quality STEM exhibitions that will help young learners and their families engage with rich science and engineering content, and cultivate essential skills and attitudes toward learning. We seek IMLS funding for fabrication and installation of these two exhibits. WATER is a "hands-in" liquid laboratory where children and adults explore water's properties and participate actively in their own learning. ENERGY invites visitors to explore how energy can be converted and transformed into beautiful, memorable phenomena. Both exhibits invite playful, developmentally appropriate learning for young children and were developed in collaboration with key education stakeholders to ensure they support school readiness and the STEM competencies of formal learning. Please note that floor plans and the names of exhibit elements are being finalized and may change slightly from what is in our application. Thank you for considering our request.

WATER takes children's natural fascination with stomping in puddles, splashing in bathtubs or running through sprinklers and scaffolds it into scientific exploration and experimentation. In a richly sensorial space where the sound of moving water provides a counterpoint to the excited voices of young scientists, children can plunge into the properties of water, learning about buoyancy, density, evaporation and displacement. The 2,200-square-foot exhibit will include more than a dozen interactive features that invite visitors to investigate water in creative ways that take the "usual" children's museum water exhibit to a higher level. Please see Supporting Documents 1 and 2 for the current floor plan and overhead rendering. Highlights include:

- **River's End:** Consisting of low, quiet basins, this feature invites the youngest guests (through age 3) to explore the properties of water using a variety of tools and containers.
- **Laminar Jets:** Guests can roll balls down a ramp and observe as the spheres are propelled to the top of a column of water. Side-by-side laminar jets allow guests to "race" balls and invite mathematically-based comparisons of height, speed and duration.
- **Build-Your-Own Plumbing:** Taking clear sections of pipes and fittings, young engineers can design and build endless water-conducting configurations fed by an oversized, spring-loaded faucet.
- **Big Bubblers:** Guests explore the interplay between water and air as they pump air bubbles into three clear, liquid-filled columns that rise dramatically through the second-floor ENERGY exhibit.
- **Rain Manifold and Thunder-Maker:** A kid-powered weather event! Tugging a whimsical umbrella handle triggers a downpour from the ceiling above the second floor into a waiting reservoir on the first floor. Nearby, a sheet of flexible metal can be agitated to create the sound of thunder.
- **Raindrop Percussionist:** Visitors compose their own "water music" by controlling the rate droplets fall onto a variety of percussive materials.
- **Squeegee Gantry:** Along a clear wall designed to look like the side of a skyscraper, visitors can perch on a platform (similar to those used by window washing crews), and lift themselves 12 to 18 inches off the ground. There, they can spray and squeegee the wall, exploring water as mist, droplets or rivulets.

The exhibit will hone children's cognitive, language, fine and gross motor, social/emotional and sensory developmental domains while also addressing the mathematics, science, and engineering content areas. Specifically, kids and adults will:

- Explore the physical and sensorial properties of water
- Act on their own curiosity
- Formulate and ask questions
- Develop scientific dispositions including eagerness to learn, curiosity, and a sense of self-efficacy
- Enhance understanding of physical science concepts such as *volume, weight, pressure, force, buoyancy, density, displacement and states of matter*

- Make decisions, formulate and test hypotheses, and engage problem-solving skills
- Engage in play patterns that build capacity for invention, creativity, leadership, and cooperation
- Strengthen small and large motor skills as they manipulate tools and materials

Note: We recognize, because we live in a semi-arid state, that water is a precious commodity. Water will recirculate continuously in the exhibit with as much as possible being reused daily.

ENERGY connects children – walking, talking dynamos in their own right – to the fundamental idea that energy drives everything that moves, grows or changes. In the new 2,100-square-foot exhibit with more than a dozen hands-on elements, children will come face-to-face with essential questions about energy: *How can limited energy resources be collected and deployed within a system? How can fuel be used to produce inspiring, beautiful and exciting effects? How can one form of intangible energy be transformed into perceptible movement, light or heat?* Please see Supporting Documents 3, 4 and 5 for a floor plan, overhead rendering and components plan. Highlights include:

- **Solar Symphony:** Light energy triggers digital sensors to produce an orchestral voice. An array of sensors allow for a variety of musical instruments to be heard (i.e., percussion, strings, brass, etc.), and the arrangement can be endlessly varied by shading or exposing one or more sensors.
- **Rocket building and launching:** Children can explore aerodynamics by constructing paper rockets and air-launching them – then reconfiguring designs to improve performance, just like real engineers.
- **Wind and Wings:** Standing in front of three powerful fans with varying speeds, children can don foam wings modeled on the wing structures of a jet, raptor or dragonfly and feel the effects of moving air.
- **Wind Grass Ceiling:** Invisible wind energy becomes visible as children aim and discharge an air cannon, creating stunning ripples in an overhead canopy of Mylar or polypropylene ribbons.
- **Whoopee Wall:** It's just what you think! Children squeeze pressurized air from dozens of whoopee cushions mounted on a wall, producing the familiar honking sound from these giggle-inducing props.
- **Hot-air Balloon Launch:** Guests make their way among Gabion walls (wire-caged rocks used in real life for erosion control and construction stabilization). Our walls will be filled with rock and aggregate to suggest geologic strata. At nine points in the walls, guests can collect glowing energy nuggets to feed into a generator that provides heat to inflate and fly a hot-air balloon.

The exhibit supports the development of children's cognitive, fine and gross motor, logic and reasoning, and communication skills, while providing experiences richly informed by math and science content. Specifically, visitors can:

- Initiate actions and reactions to explore causal relationships.
- Observe the effects of their energy inputs as they generate beautiful phenomena and happenings.
- Devise investigations to manipulate variables, test predictions and pursue original lines of inquiry.
- Gain experiential awareness of key physical science concept: *energy is the power to do work and make things happen.*
- Pose problems, engineer solutions, and engage in iterative design processes, specifically related to designing, building and launching rockets.
- Strengthen science and engineering process skills, including wondering, questioning, investigating, designing, testing, communicating and reflecting.
- Cultivate essential learning mindsets including curiosity, initiative, persistence and self-efficacy.

Need: With seven consecutive years of record attendance, the Children's Museum of Denver is the nation's most crowded children's museum based on number of visitors per exhibit square foot. Last year, our attendance topped 348,000, up 11% from 314,000 the year before. In FY14, which began July 1, attendance continues to above our projections and is up another 11% from last year. In total, the expansion project will increase indoor and outdoor square footage devoted to early childhood educational experiences to 49,000

square feet from 12,000. Thus, from a capacity standpoint, the expansion project that includes ENERGY and WATER is critical if we are to succeed as an innovative learning resource for young children and their families.

But more importantly, expansion provides an opportunity to better focus the Museum's programs and exhibits on evolving educational needs for young learners – needs where high-quality, hands-on, informal learning can make a difference. With advice from early childhood experts and review of Colorado and national educational needs, STEM was chosen by Museum leaders as one of our strategic impact areas, along with early childhood health and wellness, school readiness (particularly for low-income children), the arts, and parent and caregiver engagement. We also recognize our unique role in helping young children hone 21st century skills and executive functions skills, helping them become more thoughtful, flexible, creative and confident global citizens. We agree with the 2013 IMLS report *Growing Young Minds* that early childhood learning is very important to school and career success, and that providing rich learning experiences for parents, children and their caregivers make a difference, especially for low-income populations. After expansion, we will greatly increase educational programming – including free access for low-income families and schools – in STEM and other important subject areas. See Document 6 for a letter of endorsement from Denver Public Schools regarding our role in supporting formal education.

Once strategic impact areas were chosen, we recruited Colorado experts to help us prioritize STEM educational needs and devise ways to meet those needs. Our STEM Advisory Group included representatives from the Colorado Department of Education, Xcel Energy, Encana Energy, Denver Public Schools, University of Denver, Piton Foundation and Gill Foundation; the group continues to be very involved as we refine experiences. See Supporting Document 7 for names of advisors.

Our internal review of state and national data also made it very clear that STEM learning is a critical need, nationally and in Colorado. The National Academy of Sciences report, *Rising Above the Gathering Storm*, found that fewer than one-third of U.S. fourth-graders and eighth-graders performed at or above a proficient level in mathematics and only 15 percent of all U.S. undergraduates receive their degrees in natural science or engineering. In China, the figure is 50 percent; in Singapore, it's 67 percent. On the 2013 Transitional Colorado Assessment Program, only 49% of fifth-graders taking the science test were proficient or above. Racial and ethnic minorities and students with family incomes qualifying them for Title I assistance had even lower average proficiency rates. IMLS has recognized the need for better STEM education by choosing STEM as a special focus area in Museums for America grants this year.

Relatively little emphasis is placed on STEM experiences for young children despite these concerning statistics as well as studies that show attitudes toward STEM subjects are largely set by the time children are 9 years old (James Trefil, 2008, and T.E. O'Shaughnessey, 2000). There is also mounting evidence that intentionally designed out-of-school-time experiences can feed or stimulate the science-specific interests of adults and children, may positively influence academic achievement for students, and may expand participants' sense of future science career options (Learning Science in Informal Environments, National Research Council, 2009).

WATER and ENERGY will join the Museum's existing STEM exhibits and will offer early learners play-based, content-rich STEM learning experiences that will pique their interest, build their confidence and increase the likelihood that they will pursue further STEM education and STEM careers.

Who will benefit: Our focus will remain on children 8 years old and younger with their adult influencers. In the Denver metro area (Denver, Arapahoe, Jefferson, Adams, Broomfield and Douglas counties), the number of children 8 years and younger is expected to grow to nearly 348,000 in 2020 from 325,000 now, according to the State Demography Office. More than half of Colorado children live in the metro area. While the majority of our visitors come from the metro area, we have seen the share of visitors from elsewhere in the state increase

significantly to 9% in FY13. Statewide, the number of children in our target age range is expected to grow to 693,000 in 2020 from 629,000 now.

The state's population will continue to become more diverse, according to demographic forecasts. The Colorado Children's Campaign notes that the percentage of Colorado children who are non-Hispanic white declined 9 percentage points between 2000 and 2011 while the proportion of Hispanic children grew 7 points. As noted earlier, the scores of children from racial and ethnic minority groups on TCAP science tests are lower on average than all students' scores. The Museum will continue to offer parenting information, newsletters, signs and other materials in Spanish as well as English.

Our general visitor reflects the makeup of the Denver area, which is 66.7% White, 21.8% Hispanic, 4.9% African American, 3.7% Asian, 0.5% Native American and 2.3% two or more races, according to the 2010 Census. However, we have programs to encourage free visitation by metro area families who cannot afford admission or membership fees. These families tend to represent greater racial and ethnic diversity. In the Museum's last fiscal year, we offered 16,670 free, annual family memberships to low-income and underserved families. At present, approximately 30% of Museum member-families have received free memberships.

Both WATER and ENERGY are designed to serve children throughout our entire age range (birth through 8). Exhibits also are designed to encourage adults to be facilitators and explorers in their own right.

What are the intended results: The Children's Museum is using its extensive experience in designing and evaluating STEM exhibits to create WATER and ENERGY as hands-on, engaging opportunities to explore scientific concepts, enhance scientific curiosity and nurture foundational skills of scientific inquiry. Both exhibits are informed by the most recent and rigorous research and evaluation regarding free-choice learning environments, family learning theory and pedagogy, and research related to learning science in informal environments¹, including the "Strands of Science Learning" framework (National Research Council, 2010) that articulates the science-specific affordances of informal learning environments. Specifically, ENERGY and WATER support:

- **Strand 1: Sparking Interest and Excitement** -- Affording a wealth of opportunities for children and adults to experience excitement, interest, motivation to learn and curiosity about phenomena related to the natural and physical world;
- **Strand 3: Engaging in Scientific Reasoning** – Providing learners with myriad invitations and entry points to manipulate, test, explore, predict, observe and make sense of the natural and physical world.
- **Strand 5: Using the Tools and Language of Science** – Embracing science as a collaborative enterprise.

Both exhibits also align with the Next Generation Science Standards and Colorado Academic Standards (physical science and earth systems science specifically); the Head Start Early Learning Framework for science knowledge and skills; and AAAS Science Literacy Benchmarks for science literacy (K-2).

Precursors to the ENERGY and WATER exhibits include the Museum's Just Add Water (a temporary outdoor exhibit operated during the past two summers) and 3,2,1...Blast Off! (a rocket-building and launching exhibit that began as a temporary outdoor exhibit, then opened indoors in February 2013). Kinetics!, a physics exhibit, opened in October 2012. These exhibits have been extensively prototyped and refined. We have designed ENERGY and WATER with greater inter-exhibit connections, allowing for experiences that are not disparate, encapsulated events, but allow visitors to explore phenomena across multiple experiences.

¹ Including the work of the National Research Council (*Learning Science in Informal Environments: People, Places and Pursuits*, 2009; *Surrounded by Science: Learning Science in Informal Environments*, 2010; and *How People Learn: Brain, Mind, Experience and School*, 2000)

Advancing the strategic plan: Increasing the quantity and quality of experiences offered to guests of all ages is a critical goal of the Museum's strategic plan. By adding WATER and ENERGY to our family of exhibits, we provide Museum visitors with two innovative, hands-on STEM exhibits that complement what children are learning in school and that help them better appreciate and enjoy science, technology, engineering and math. More about our formal evaluation processes can be found in Project Results/Measuring Success.

2. Project work plan

Specific activities: IMLS funding will support costs associated with the fabrication and installation of the WATER and ENERGY exhibits. Specifically, IMLS grant funds will be applied to the fabrication and installation of the more detailed, specialty exhibit features that will make ENERGY and WATER unique and engaging experiences. Please see the Budget and Budget Justification documents for details. A timetable for the work to be funded is in the Schedule of Completion.

Who will plan, implement, and manage your project: Chief responsibility for the fabrication and installation of the ENERGY and WATER exhibits rests with Exhibits Director Jonathan Goldstein. Jonathan works closely with senior Museum and project leadership to ensure that overall expansion project deadlines are met and exhibit learning outcomes are achieved. Chris Van Dyken, Exhibit Design and Operations Manager, and Ryan Hainault, Exhibit Design and Development Manager, support Jonathan in exhibit fabrication and installation. In addition, Fransen Pittman, a 19-year-old Colorado company with annual volume of \$70 million, was selected as the project's primary external exhibit fabricator. We also expect to delegate some exhibit work to specialty fabricators, still to be selected. Please see Project Staff and Resumes for additional information.

Among our most valued expansion team members are the children and parents we serve. They have been and will be involved heavily in exhibit prototyping. For example, literally thousands of children and their grown-ups have splashed and experimented in the prototype of WATER, Just Add Water, in which multiple components were built to scale and tested on the Museum floor for a total of six months. For the ENERGY exhibit, we will create and pilot-test several features, including the air cannon, the wind ceiling, and the energy nuggets.

When and in what sequence will your activities occur? We expect to break ground on the expansion of the Museum, including the space that will house ENERGY and WATER, in spring 2014. We will finalize construction documents for all exhibits including ENERGY and WATER by January 2015. Exhibit fabrication would follow in February 2015; some basic elements might be started in late 2014 (hence our decision to request the funding period of November 1, 2014, through Oct. 31, 2015). Building construction is scheduled to be completed in July 2015. After a certificate of occupancy is approved, exhibit installation would occur from July to October 2015. The Museum's grand opening would be in November 2015 at the latest.

What financial, human and other resources will you need: The capital campaign's total goal for expansion is \$15.8 million and the Museum staff and board are very pleased to report that we have received gifts or pledges totaling nearly \$12.7 million, putting us 80% of the way to our goal. In addition, the Museum has built its human capital, assembling a strong team in fundraising, exhibits and education – all in support of the expansion effort. We have augmented the internal team with a general contractor that has experience in a wide range of projects of our size and type. We also have strong respect for and confidence in Boss Display, which will handle some exhibit fabrication along with our internal staff of exhibit experts.

What resources will the Museum offer to this project? The Museum will provide the design and installation plans needed for fabricating and installing new exhibits, as well as some fabrication and installation. The Museum staff also will oversee the work of outside contractors during exhibit fabrication and installation. We also will provide the financial backing to complete the work. As explained above, we have built and refined our human and financial resources for expansion and will use these resources to ensure the project is completed.

How will we track our progress? The Museum has established and refined processes over the years to measure the impact of its exhibits and programs and track numbers served. For the expansion project, we have incorporated evaluation throughout the process. From community needs assessment work and internal collection of baseline visitor data to external market surveys, we have carefully studied what visitors want and need, what we provide and what we should provide in the future. As fabrication and installation progresses, the staff will ensure that internal and external work is evaluated at frequent intervals – for example, our staff members will analyze how well exhibit components function and meet identified outcomes. As previously mentioned, “test-driving” exhibit elements with the people who will use them – our child-visitors and the grown-ups who bring them here – is an important part of our evaluation process as well. Our Will-It-Works studio in the existing Museum lets us set up exhibit elements for testing and record results in an observation room separated from the studio by a two-way mirror.

During fabrication and installation, we will test exhibit components and then modify and re-test them as needed. We also will call on the counsel of our advisory committees and their subcommittees during the process to ensure the work is producing meaningful experiences that serve the full spectrum of our identified age range, align with state standards and accommodate the needs of school-group and individual visitors.

How and with whom will the Museum share results? The Museum’s Experiences Advisory Group, composed of key community education leaders and advocates, including representatives from the Museum’s Education Task Force and Extended Vision Task Force, will convene for topic-specific meetings such as: parent/caregiver education and support efforts, new exhibit fabrication input, community partnerships, etc. As a member of various national museum organizations, the Museum will share its experiences (formally during conferences and meetings and informally as contacted) with other museums. The Museum also was a pilot site for Preschoolers, Parents, and Educators: Strategies to Support Early Science Literacy (PPE), a project funded by the National Science Foundation and led by the Children’s Museum of Boston to evaluate the Adult-Child Interaction Inventory. We plan to use the inventory in evaluating our new STEM exhibits and to share results with other PPE participants, who continue to meet informally.

3. Project results

What knowledge, skills, behaviors, or attitudes do you expect to change and among whom? IMLS funding for fabrication and installation of WATER and ENERGY will enable the Museum to better serve its target audience (children from birth through age 8 and their caregivers) with innovative, hands-on STEM experiences. The intended learning outcomes for our target audiences are:

Children

- Change in engagement: Children will show high levels of interest, engagement and excitement in ENERGY and WATER exhibit spaces.
- Change in behavior: Children will show evidence (indicator behaviors) of STEM process skills such as observing, predicting, testing, and using the language of science.

Parents and Caregivers

- Change in attitude: Adults will increase value placed on science exploration and learning experiences as a family activity.
- Change in intention: Adults will express intent to visit the Museum and/or other STEM-rich educational venues again.
- Change in skills: Adults will learn strategies to support and scaffold STEM process skills and thinking for their children.
- Change in behavior: Adults will demonstrate supportive, scaffolding behaviors within the exhibits.
- Change in behavior: Adults will engage in their own play and exploration with exhibit materials.
- Change in behavior: Family groups will spend extended periods of time in these exhibit spaces (relative to average “sweep rate” of museum exhibits) and will engage with multiple exhibit components

How will you measure success in achieving your intended results? The Museum has a long history of evaluating how it can better serve its audience and that focus on evaluation has been part of the Museum's expansion planning from the outset. We will use these tools:

- **Outcome:** Engagement

Methods: Structured observations (based on Observing Active Prolonged Engagement/Visitor Behaviors framework); timing and tracking studies; visitor interviews/constructed responses.

- **Outcome:** Scientific Reasoning & Using Language of Science

Methods: Structured observations, visitor (adult and child) interviews; analysis of real-time (recorded, transcribed and coded) visitor conversations or discourse analysis (mapping language on the five categories of conversation posited by Allen, 2002).

- **Outcome:** Adult-Child Interactions; Adult Participation and Facilitation

Methods: Structured observations using the ACII instrument, visitor (adult) interviews using the ACII instrument; timing and tracking studies.

We will continue to use general evaluation tools including guest comment cards, surveys of educators who bring school groups to the Museum, and short surveys of participants in the daily drop-in programming we provide. In addition, we have adopted a guest experience intercept surveys instrument to supplement comment cards with greater depth of information, including visitor demographic data. The intercept surveys are conducted with general visitors at least monthly. Data collection days are varied to ensure we capture a diverse audience sample. We ask adult visitors whether their Museum experience was creative, enhanced children's learning and taught them something about their children, using a scale from 1 to a maximum of 5.

What project results will be of value to the field? After years of planning, assessing, developing, designing and prototyping the experiences that will be the shining stars of the Museum's expansion, best practices around the numerous processes involved with the creation of world-class exhibits will be finely honed. Those, along with evaluation results following the first year post-expansion, will be happily disseminated to the field. Additionally, the Museum's experience of balancing a capital campaign while maintaining daily operations is valuable to other organizations on the brink of similar endeavors. Through presentations during meetings of professional organizations as well as informal conversations with colleagues who are considering or experiencing expansions, we will share our advice and counsel about the fabrication and installation processes for exhibits comprising a major expansion such as ours. The Children's Museum of Denver is an active member of the Association of Children's Museums (ACM). Mike Yankovich, Museum President is a member of the Board of Directors of the ACM, and Gretchen Kerr, Chief Museum Officer is a member of the ACM Program Committee. We propose to share our findings and deliverables with this audience at the Association of Children's Museums annual "Interactivity" conference. Conference sessions will also be proposed at: Association of Science and Technology Centers, Visitor Studies Association conference, American Alliance of Museums conference, among others.

How will you sustain the benefit(s) of your project? Museum leadership began thoughtfully preparing for expansion and its associated exhibits and programs more than four years ago. After thorough analyses of on-site attendance trends, comparable museum trends (new construction and expansion cases) and Denver-area demographic trends, it was determined that an expansion at our current location will ensure the Museum will continue to serve the community in a dynamic and significant way and will be financially viable long term. The Museum's Business Plan for Expansion includes a 15-Year Attendance Forecast as well as an FY 2018 (the Museum's stabilized year, post-expansion) Pro Forma, projecting both revenues and expenditures needed to successfully support Museum operations and the new exhibits proposed in this request.

ENERGY and WATER

Fabrication and Installation Timeline

IMLS funding period begins: November 1, 2014

January 2015: Construction documents for ENERGY and WATER finalized

February 2015: Full fabrication work underway

July 2015: Expansion of Museum building completed

July-October 2015: Installation of WATER and ENERGY

Grand opening of Museum: Fall /winter2015

IMLS funding period ends: October 31, 2015