

# Grants Best Practices

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## Brenton, Wyoming County Pre-Disaster Mitigation

**Wyoming County, WV** – In 2004, when Vance's Trailer Park in southern West Virginia flooded, Dean Meadows, Wyoming County Emergency Services Director, knew he had to do something to help. The families in the nine mobile homes had repeatedly been flooded, year after year, including 2001 when the most severe storm in the County's history swamped the trailer park.

Meadows knew that if he didn't find a solution, the cycle of flooding, rebuilding, and flooding again, would continue for the nine trailer park homes. The solution was a Pre-Disaster Mitigation (PDM) voluntary acquisition project. A PDM is a competitive grant subject to Congressional appropriations to reduce the overall risk to people and property from future disasters, and to lessen reliance on Federal, State, and local disaster recovery funding.

After the families were moved to their new homes, most of which were in Wyoming County, the trailer park was converted to a community park that a local church volunteered to maintain. They also bought picnic tables, and recreational and playground equipment where today children play on the swings under the watchful eye of a proud community.

This PDM project paid off. During the May 2009 flood, the Guyandotte River rushed over its banks and covered the property with 3 feet of muddy water. This time no homes were damaged and no families were forced to leave. Also, the County, State, and Federal governments avoided funding costly disaster-related losses.

"This type of flood mitigation project is one hundred percent effective and having the church taking pride in their community and become caretaker of the recreational park is an added bonus," said Meadows.

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## Elevation Grants Make Multiple Homes Safer

FREEPORT, NY – As Hurricane Sandy barreled towards the Northeast coast during the last week of October 2012, Carl Laibach and his family watched with a growing sense of dread. From all reports, Sandy seemed likely to imitate the famed “Perfect Storm” of 1991, which caused destruction and havoc from North Carolina to Maine, and ultimately left more than an estimated \$200 million in damage in its wake as well as 13 fatalities. As Sandy bore down on the Long Island coast, the Laibachs were concerned the results would be similar to the 1991 storm. They would have one advantage, though: their house was elevated several feet above its original height.

The Laibachs moved into their home in the Village of Freeport, New York (Nassau County) in 1997. Lifelong residents of Freeport, they knew that houses in certain areas of the community were subject to frequent flooding. They also knew that the house they were considering buying was one of those structures that had seen flooding multiple times in the past, but the house and its location were so desirable, they couldn’t pass up the opportunity. Shortly after moving in they were informed that the community was participating in a grant opportunity managed by the State of New York.

“When we moved in, we got on the program to raise the house right away,” said Laibach. “Freeport [village officials] was very good at what they did: applying for the grants, picking the contractors, and managing the process. It took a couple of years to get it done, but the time went very fast, and I’m really glad we did it. Just really glad.”

Joe Madigan is Assistant Superintendent of Buildings for Freeport, as well as the village’s Floodplain Manager. As such, the responsibility for dealing with the issue of Freeport’s repetitively flooded structures falls to him and his staff. According to Madigan, approximately 3,200 structures in the little coastal community sit within the floodplain, more than 300 of which are subject to repeated flooding. Being so close to Jones Inlet, which feeds directly from the Atlantic Ocean, particularly high tides can bring what he refers to as “nuisance flooding”, which can range from several inches to as much as two feet of water, into some of these structures on a regular basis.

“Lifelong residents in the flood zone are used to this type of flooding,” said Madigan. “Their mitigation was opening the front door when the water comes up, and opening the backdoor when the water goes out. In the southern part of town, high tides are just a way of life. You just live with it.”

While many Freeport residents have come to accept the ongoing flood issue as a regular occurrence, Madigan has made it his mission to address the problem. He and the rest of his staff at the Department of Buildings actively seek methods and solutions to reduce or eliminate the ever-present flood risks facing their neighbors. Through education, grant opportunities, and the introduction of various programs, Freeport officials have made inroads against the threat posed by repeated flooding.

Freeport is an active participant in the Federal Emergency Management Agency’s (FEMA) National Flood Insurance Program (NFIP). Participation in the NFIP is the only means for people living in such communities to purchase federally-backed flood insurance policies. The only other option for residents of non-participating communities is through a limited number of insurance companies, which may sell individual flood insurance policies but at considerably higher rates.

Another benefit to participation in the NFIP is access to the Community Rating System (CRS). The CRS is a voluntary incentive program that communities can apply for that offers an incremental discount to flood insurance costs for the completion of certain activities that exceed minimum NFIP requirements. There are ten levels in the CRS, and activities earn a number of points towards each progressive level. For each level achieved, residents of a participating community receive a five percent discount off of their flood insurance

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policies, up to a maximum reduction of 45 percent. Thus, a class nine community (class ten communities receive no discount) receives a five percent discount, while a class one community receives the full 45 percent. Currently, Freeport holds a rating of seven, which entitles its residents to a 15 percent discount.

“Some of the activities we do for the CRS include maintaining elevation certificates on all the structures in our floodplain,” said Madigan. “Those are stored digitally in our computer system and are available to the public. We have an outreach program where we do a couple mailings every year (one in March and another around hurricane season) and we inform our residents of their flood risks, activities they can do to mitigate for different types of flooding, and how to prepare emergency supply kits. Things like that get us points.”

In 1997, Madigan and the Building Department staff began the process of applying for grant assistance to deal with some of the repeatedly flooded homes in Freeport. They knew that several grant opportunities were available from FEMA, which provides money to states to perform various mitigation efforts. Activities such as acquisition programs, structural relocations, and demolitions can be accomplished through grants. Another popular form of mitigation is structural elevation, which keeps a building in place, but lifts it above a community’s Base Flood Elevation (BFE). The Base Flood is the area of the floodplain subject to the one-percent annual flood (commonly referred to as the 100-year flood), or the flood having a one-percent chance of being equaled or exceeded in any given year.

Madigan and his team decided to pursue grants to conduct a series of elevations to raise some of the threatened homes above potential future flood levels. The first step was identifying homeowners interested in participating in the program. The Building Department conducted an outreach effort to inform the public of the grant opportunity, sending mailings to homeowners in the floodplain. To ensure the word got out to everyone in the threatened areas, Building Department staff went door to door, spreading the message and garnering responses. From the initial list of interested homeowners, 17 were ultimately submitted for the first grant, which was from FEMA’s Flood Mitigation Assistance Program (FMA).

FMA grants are intended to assist states and communities in implementing measures that reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other structures insured under the NFIP. While FEMA does provide the funds, grants are managed by the State, and states are encouraged to prioritize applications that focus on repetitive loss properties.

From 1997 to 2003, Freeport was awarded FMA grants to elevate 23 houses. In addition, two other houses were approved for elevation funds through the Hazard Mitigation Grant Program (HMGP), which is a similar program to FMA, but is only available following a major disaster declaration. In both, grant money comprises 75 percent of the cost of the project, leaving the remaining 25 percent the responsibility of the sub-grantee (homeowner, community, etc.). Often, sub-grantee portions of the project costs can be met through the use of in-kind services, such as paying for architectural drawings or engineering fees.

Since completion of the elevations, Freeport has seen two significant storms which tested the completed projects. Hurricane Irene struck the east coast in August 2011, causing widespread destruction. Freeport was one of the hardest hit communities in New York, suffering substantial flooding. All 25 elevated houses, however, were left completely unharmed and unaffected by Irene’s floodwaters.

As Sandy approached one year later, the residents of Freeport, and Joe Madigan and staff, braced themselves again. Once more, Freeport was slammed. Hundreds of buildings, commercial and residential, flooded, some being inundated with several feet of water. As before, the elevated homes weathered the flooding with no significant issues. For Madigan, the two storms prove the value of all the work they did years before.

“The homeowners [of the elevated houses] have a sense of comfort and security in knowing they’re above the flood,” said Madigan. “If you talk to these people today, they’re ecstatic.”

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For Carl Laibach, all he has to do is look around his neighborhood to see the value in the elevations. His neighbor across the street, whose house flooded during Irene, has been forced to move out again due to Sandy. His next door neighbors are gone, and several houses down the street are empty. From his estimation, Sandy has cleared out more than a quarter of his neighborhood.

“This was the worst storm I’ve ever seen in my life,” said Laibach. “You always have a lot of anxiety before something like this, because you don’t know how it’s going to turn out. Luckily, with the house being raised, it turned out alright. It makes it a lot easier to live in when you know that a big high-tide or even a storm like Sandy isn’t going to affect you. It’s also a great investment. My house is more valuable now because it’s elevated. It’s really a no-brainer as far as I’m concerned.”



This model demonstrating proper building techniques sits in the lobby of the Freeport Building Department.



Joe Madigan, Carl Laibach and some of the Freeport Building Department staff stand in front of Laibach's elevated home.

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## FEMA Grant Helps Town Rebuild Road, Improve Safety for Residents

**Hancock County, ME** - The coast of Maine is subjected to vicious winter storms that produce a witch's brew of rain, snow, and ice along with high winds. Along the coast of Maine, there are many small villages that date back to the 1600s. One of them is the Town of Surry, located on the shores of Penobscot Bay. An old fishing village backed by steep hills, the area is a submersed mountain range that includes Cadillac Mountain, the highest point along the East Coast.

Thatcher Hill is one of many steep roads in Surry that was never properly constructed. It is an old logging road that runs straight up the hill. To make matters worse, the road sits on a ledge, making it impossible to install a ditch line. Without a proper ditch line, a road is prone to water damage. Hence, repairs to this road had been never ending, averaging four times per year. The problem of Thatcher Road closures has had a ripple effect on neighbors, schools, businesses, and municipal and utility services. This road affects almost half of the housing units in town (262 out of 551 year round dwellings) and 22 percent of the town's population (306 out of 1,361).

After much town input, the Town of Surry decided that the only viable solution was to remove the ledge, improve the drainage and ditches, and resurface the road. The plan of action was for the town to apply for a Hazard Mitigation Grant Program (HMGP) grant. The Federal Emergency Management Agency's (FEMA's) HMGP provides grants to state, Indian tribes, and local governments for long-term hazard mitigation projects following a major disaster declaration. Under the HMGP program, FEMA pays up to 75 percent of the project cost, while either the state or the applicant covers the remaining 25 percent. The grant was applied for in August 2005 (under DR 1591-ME) for the improvement of drainage on the Thatch Hill Road.

On June 5, 2007, the HMGP grant was approved and work began. The Thatcher Hill Road project set out to improve safety by controlling the erosion and eliminating water flow onto the road, preventing ice buildup in the winter. The work consisted of removing brush, blasting the ledge, excavation of a ditch line, armoring the ditches, and installing six driveway culverts and four cross culverts. The entire project area then received a shim coat to provide the proper top protection to the road.

The project took a little over two months and was completed on July 13, 2007. The total cost of the project was \$146,762. The town of Surry paid the total local share of \$36,690.

As of February, 2009, Surry town officials report confirm that the road has not suffered the repeated cycle of damage. Now the citizens have a safe and reliable means of traveling to and from their homes.

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## FEMA HMGP Funding Provides Security in Port Neches

**Port Neches, TX** – As Hurricane Ike ravaged the coast near the Louisiana-Texas border with wind gusts of more than 110 mph, Emergency Management Coordinator Stephen Curran and Police Chief Paul Lemoine hunkered down in the Port Neches fire house. The two local officials could only hope that mitigation measures funded through the Federal Emergency Management Agency's (FEMA's) Hazard Mitigation Grant Program (HMGP) would spare the town from the degree of damage caused by Hurricane Rita 3 years earlier.

The purpose of HMGP is to reduce the loss of life and property in future disasters by funding mitigation measures during the recovery phase of a disaster. FEMA provides up to 75 percent of the funding, with the remainder coming from the state or applicant or both. The state administers the program and selects the projects with approval by FEMA. Applicants, which must have FEMA-approved hazard mitigation plans, may be states, local governments, Indian tribes, or certain nonprofits. Funds can be used for long-term mitigation measures, including protection of public or private property.

Following Hurricane Rita, Port Neches received funding through the FEMA Public Assistance Grant Program to return damaged public facilities to their pre-disaster conditions. City officials then became aware of the HMGP opportunity to strengthen the facilities. "We went to a seminar and found out what kind of projects would be considered for funding, and we took advantage of the program," Curran said. In January 2007, Port Neches received eight HMGP grants, totaling \$1,512,825, to implement wind retrofit projects. Retrofitting measures were completed on the public works building, library, community center, fire station, city hall, sewer plant, senior citizens center, and police station.

The projects involved re-roofing using FM Global 1-150 rated roofs. This type of roofing meets design and installation criteria mandated by the Factory Mutual Research Corporation, the nonprofit research arm of the Factory Mutual Insurance Company. The 1-150 rating is laboratory tested using an uplift test load of 150 pounds per square foot. The mitigation projects also included replacing existing entry doors with heavy-duty, impact-resistant doors and adding electric roll-down storm shutters to windows.

"During Hurricane Ike, all shutters were in place. It was neat to simply push a button to secure the buildings. This freed up our time to concentrate on getting people to safety," Curran said. "In the past, it took us a couple of days to secure public buildings with plywood."

Some of the HMGP funds were used for the safe room at the Effie and Wilton Hebert Public Library. A safe room is an interior space that is fortified to provide a high level of protection against extreme winds, such as those in hurricanes and tornadoes.

Curran speaks proudly of the advantages of the mitigation measures undertaken and plans to take advantage of future HMGP funding. "We spent every penny that FEMA gave us, wisely. With the high winds from Hurricane Ike, those high impact doors were awesome, the roofs remained intact and the shutters did their job. It was definitely money well spent."

Several facilities that were not mitigated, including the post office and public works annex, suffered damage from Hurricane Ike.

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## Grant Helps Small Road to Handle Its Large Responsibility

Evangeline Parish, LA - When the rains fell, the problems started for drivers on Rixby Manual Road, a connecting street between two highways north of Ville Platte, the seat of this south-central Louisiana parish.

"The road was a mess in the past. There was always a lot of flooding," said Doug Deville, the secretary-treasurer of the Evangeline Parish Police Jury. "Because there was so much traffic that accessed that road, when it flooded, it caused total chaos."

After severe flooding damaged a 900-foot-long by 20-foot-wide section of the road's 12-inch base in October and November 2006, Evangeline Parish officials applied for and received a Federal Emergency Management Agency (FEMA) grant through the Public Assistance 406 Mitigation Program. Such funds, available following presidential disaster declarations, are used to promote life- and property-saving measures, protect infrastructure, and ultimately help build disaster-resistant communities.

The program assists State, Tribal, and local governments and certain types of private, nonprofit organizations with projects in several categories, including improvements to roads that are damaged by disasters and need to be repaired, replaced, or restored.

FEMA pays 75 percent of the eligible costs of Public Assistance projects, while the State and/or applicant cover the remaining 25 percent. For the Rixby Manual Road project, FEMA provided \$101,475 of the \$135,300 total cost. Once FEMA provides the grant to a state, it is the State's responsibility to manage the funds, which includes making disbursements to local jurisdictions and organizations that incurred costs.

The scope of work on Rixby Manual Road included the replacement of the damaged road base and the addition of a pipe and backfill to match the existing road elevation. In addition, concrete catch basins were installed to collect surface water during heavy rains or floods.

"During a meeting with the project officer it was suggested that the addition of a sub-surface drainage system would help to alleviate erosion, so that was added to the scope of work," said City Engineer Justin Fontenot.

Sub-surface drainage systems are used when the drainage problem is mainly that of shallow water tables. Open ditches intercept groundwater and divert it.

Work on the project began in February 2007 and was completed 15 months later.

"I would just like to brag on the success of how well the project works," Deville said. "It made all the difference in the world."



Photo of subsurface drainage discharging into the drainage lateral



Photo of catch basin top which allows the surface runoff water access to the subsurface drainage

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## Grants and Forward Thinking Prevent Sewer Backup

**Geneva County, AL** – The City of Geneva is located at the intersection of the Choctawhatchee River and the Pea River with the Double Bridges Creek running inside the fork. During major flooding events, damage from sewer backup can be very common and devastating for homeowners. Preventive measures can be taken to keep it from happening.

James Dixon has worked for the Geneva Water Works and Sewer Board for 32 years. He manages the sewer plant that receives and treats sewage for the City of Geneva. The sewer plant is located in the lowest part of town, which helps avoid sewer backup but also increases the flood risk.

After a major flood in 1994, Dixon started planning to avoid future damages for Geneva's sewer system. He wanted to elevate all critical controls needed to keep the plant running in the event of flooding. He started looking for funding available to help with this project. "I was always saying how great it would be if we had some money to stop the damage," said Dixon.

The Federal Emergency Management Agency's (FEMA's) Hazard Mitigation Grant Program (HMGP) is administered by the state and it is available after a major presidential disaster declaration. FEMA pays for up to 75 percent of the project cost and the applicant covers the remaining amount.

Dixon submitted an HMGP application for the elevation of the sewer plant in 2005. After it was accepted, the project was completed in 2007. It included elevating a 350 kilowatt generator with a 1,500 gallon fuel tank to keep the plant running during power outages.

The critical controls, motors, blowers, and generator are elevated five feet above the 500-year flood, which is defined as a flood that has 0.2 percent or greater annual probability of occurring.

The total cost of the project was \$378,000. For many years, Geneva Water Works has set aside \$3,000 a month in a reserve fund. They used those funds to cover their part of the project cost, which was \$94,500.

"For a small utility company, it's hard to save money, but you do what you have to do," said Dixon. "We're now working on elevating all pumping stations around the city."

In March of 2009, the City of Geneva suffered a major flood. Many homes were damaged by floodwaters and roads were washed away. However, it was a non-event for Geneva's sewer plant due to the HMGP grant for this elevation project.

"Dixon always has an application ready to be submitted when funding is available for mitigation," said Margaret Mixon, Geneva County Emergency Management Director. She adds that Dixon is a good example of being proactive in looking for ways to avoid future damages in a floodprone area.



Critical controls and blowers for Geneva’s sewer plant elevated five feet above the 500-year flood.



James Dixon and FEMA’s mitigation specialist Mae Phillips stand in front of a 350kW generator with blowers in the background.

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## Hazard Mitigation Grant Pilot Provides Safe Haven for Louisiana Couple

Jefferson Parish, LA - Hurricane Katrina displaced many Gulf Coast residents including Wayne and Rosalie Oubre of Harvey, Louisiana.

"We had to live in a [Federal Emergency Management Agency] FEMA trailer for three years before we could get back into a real home," said Wayne. "But it was worth the wait. This house we have now is like a dream come true, thanks to the HMGP (Hazard Mitigation Grant Program). We feel safe."

The rear of the Oubres' home backs up to the Swift Canal, which flows into the 16th Street Canal. It leads to the main pumping station in Harvey and is a drainage canal leading from the Mississippi River.

According to the Oubres, their home has flooded five times. The last flood event, during Hurricane Katrina, had a flood depth of three feet.

"Since 1978, there was talk about demolishing homes, like ours, that flooded a lot and creating green space or relocating the homes," said Wayne. "But the city didn't want to because it would interfere with the tax revenue. We got a better deal with the HMGP program."

The program that Wayne referenced is the HMGP Reconstruction Grant Pilot, spawned out of a request from several states for FEMA to consider providing HMGP funds for the purpose of mitigation reconstruction grants, where an existing structure is demolished and an improved elevated structure is built on the same site.

Hurricanes Katrina, Rita, and Wilma struck Louisiana, Texas, Mississippi, Alabama, and Florida producing severe flooding and wind damage that resulted in catastrophic physical and economic impacts on these states, necessitating the need for financial assistance.

The HMGP Reconstruction Pilot provided an opportunity for FEMA to work with States and communities to incorporate mitigation directly into the reconstruction process. This resulted in more disaster-resistant communities as well as another option for the local and State governments that are responsible for making decisions and identifying appropriate mitigation measures for their communities.

The Oubres' 2,000 square foot newly constructed home is elevated approximately three and a half feet above the Base Flood Elevation. It has a storm resistant roof and hurricane shutters on all windows.

During construction a new load path solution, referred to as a wind uplift restraint system or rod system, was used.

The project was initiated in February 2008 and completed in four months. Total project cost was \$220,000. The HMGP Reconstruction Grant provided \$150,000. In addition to their insurance claim, the Oubres also received \$30,000 in Increased Cost of Compliance (ICC) funds.

ICC coverage is a part of all Standard Flood Insurance Policies. Claims for ICC benefits are filed separately from claims for contents or building loss. If eligible, the policyholder can collect up to \$30,000 to help cover the cost of bringing the home or business into compliance with floodplain ordinances.

"The application process and the wait time were lengthy. There were stringent rules and guidelines that you had to follow. It required pain and patience," said Wayne. "However, when you get the chance to look at the finished product, you'll be happy."

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The Oubres' remained in their mitigated home during Hurricane Isaac. Although their home was not affected by the storm, Wayne stated that there was a lesson well learned.

"We were without electricity for quite a while," said Wayne. "We know, now, we have to buy a generator."

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## Multiple FEMA Grant Programs Ease Flood Worries

**Coos County, NH** - The Town of Lancaster has a long history of ice jams and seasonal flooding. Flood-related evacuations are not uncommon. Many of the brooks and streams are prone to flash flooding. Indian Brook meandered from east to west through the Town of Lancaster, New Hampshire, passing through several swampy areas on its way to the Connecticut River. When it appeared in downtown Lancaster, the brook flowed through a series of undersized culverts at Depot Street. Due to a cycle of mountain snow melt, spring seasonal flooding and summer thunderstorms repetitive flooding was inevitable at this location.

The Depot Street culverts, twin undersized corrugated metal culverts under the road, and an undersized stone box culvert under an adjacent unused railroad bed, both sized to withstand only a “six to ten year storm,” had been the cause of significant flooding to the road and a nearby mobile home park. To add to the problem the two culverts were improperly aligned with the stream channel and a town water main ran at right angles beneath the stone culvert.

Problems and potential problems at this location included stormwater overtopping and washing out the road, loss of residential structures and contents in the mobile home park, road closure and rebuilding, and potential interruption of water service to 20 homes.

The solution to these problems involved assistance from two Federal Emergency Management Agency (FEMA) grant programs: Pre-Disaster Mitigation Grant Program and Hazard Mitigation Grant Program.

A concrete 12 by 5 foot bottomless box culvert with wing walls was installed under Depot Street with funds from FEMA’s Pre-Disaster Mitigation (PDM) Grant Program, which provides funding to states and local governments for implementing cost-effective hazard mitigation planning and projects before disasters occur. The PDM Program is a nationally competitive program with a goal to reduce the overall risk to people and property from future disasters, while also reducing reliance on funding from disaster declarations. The box culvert was completed in the fall of 2008 at a cost of \$137,380 funded by FEMA’s PDM Grant Program.

With funds from FEMA’s Hazard Mitigation Grant Program (HMGP), a 10 by 3 by 40 foot bottomless aluminum culvert was placed under the railroad bed. The HMGP provides grants to states, Indian tribes, and local governments for long-term hazard mitigation projects following a major disaster declaration.

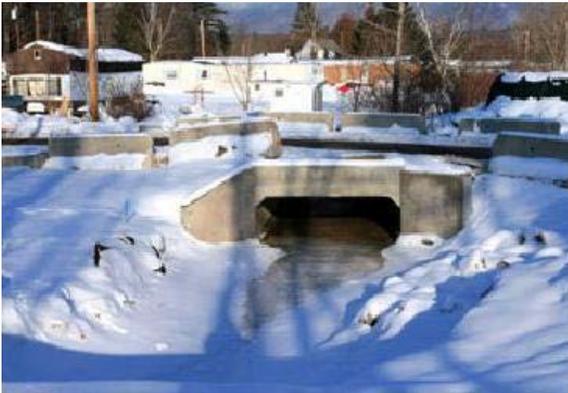
For historical accuracy under FEMA’s Historic Preservation Program, the aluminum culvert was refaced with the original stone from the previous culvert. The aluminum culvert under the rail bed had to be completed before the box culvert under the road could be replaced. The brook was also returned to its original channel at this time. The cost of this project funded by the HMGP program was \$52,290.

Under both programs, the Federal government pays up to 75 percent of the project cost. Either the state or the applicant (such as local government) covers the remaining 25 percent.

Although untested as of February 2009, mitigation measures on Depot Street should give the town one less location to worry about.



Concrete and Aluminum Culverts



Lancaster culvert project - concrete and aluminum culverts

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## Using Grants to Help Convert Overhead Electrical Lines to Underground

**Independence, MO**—For the City of Independence, removing power lines from utility poles and burying them underground is not just a matter of aesthetics; it's also good business. Through mitigation grants, Independence Power and Light (IPL) buried power lines from distribution line poles to residential structures, proving that this tactic enhances power reliability, reduces property loss, and lessens risk to human life—and it saves money.

Continuously reinstalling downed power lines, which resulted from several storms that toppled trees and snapped branches, did not make financial sense for the municipally owned company. As replacement costs continued to escalate—along with the risk to life and property damages—reversing the “reinstalling” trend became a priority.

“We are not offering customers a service by repeating what we did three or four decades ago. We have to quit pouring money into [downed power lines in] storm after storm and start finding ways to benefit customers and reduce future damages,” said Jack Looney, district engineering planner supervisor at Independence Power and Light.

“We can do that through underground utility services.”

The ice storm of 2002 crippled the area, leaving over 2,000 of IPL's 47,000 residential customers without power and some of whom suffered utility-related property damages. For most, the average electrical outage was six days. Storm damages exceeded \$1.4 million. Transmission and distribution lines were down; one lineman was fatally injured while repairing services.

“It's not the ice on the lines that causes the most damage, but the weight of ice on adjacent trees that fall and force power lines down,” Looney said.

The storm was declared a Federal disaster, and mitigation funds became available through the Federal Emergency Management Agency (FEMA) Hazard Mitigation Grant Program (HMGP). HMGP provides funding to State and local governments to implement long-term hazard mitigation measures and recover from major disaster declarations. FEMA can fund up to 75 percent of the eligible cost of each project.

“By converting overhead electric services underground, our goal is to reduce our customers' vulnerability to danger, restore power for more customers in a shorter period and reduce the expense of repairing services as well as property damages, additional crews and other overhead services,” Looney explained. “Reinstalling overhead lines following a major ice storm as 2002 is a 14-day event. It takes about seven days to repair the main distribution system and the rest of the time is spent putting services back up.”

Teaming with Missouri's State Emergency Management Agency (SEMA), IPL sought mitigation grants to facilitate the underground conversion of service distribution lines to 1,200 high-risk residential customers. IPL set out to prove that moving utility lines underground is good mitigation.

Success of the grant application primarily rests on complying with FEMA guidelines—the project must conform to the State Hazard Mitigation Plan, provide beneficial impact upon the designated disaster area, conform to environmental regulations, solve a problem independently and be cost effective.

“I can't say enough good things about the folks at SEMA. They had their arms about our shoulders, tutoring

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and advising us,” Looney added. “It’s most valuable to verify every statistic on the application. Prove it, document it—document and document.”

For HMGP projects to be considered cost-effective, a project has to return more money over its life than it cost initially. If the benefits exceed the costs, the project is cost-effective. At the onset, IPL honed in on details of every aspect of the application by:

- Recruiting various national and local weather services. IPL detailed the damaging impact of ice storm events dating from 1959 including specific damage and repair information. As the weight of ice on trees is a major culprit of downed lines, extensive data on indigenous trees by type was added, citing national studies.
- Providing maps that specified proposed project locations most susceptible to damages from ice storms, detailing ice thickness and frequency; and mapping all service lines damaged since 1991 by section locations.
- Detailing descriptions of the project such as underground conduit and trenches, meter socket replacement, conductors and riser, as well as project management information.
- Specifying details on trenches, directional boring, underground residential services, above grade secondary pedestal, and below grade secondary pedestal with detailed engineering charts and plans.
- Explaining other mitigation opportunities with details as to why converting environmental considerations.
- Justifying how the conversion project solves the existing problem.
- Providing information on Floodplain Management and Protection of Wetlands and overhead lines to underground is the best alternative.
- Utilizing FEMA’s Benefit Cost Analysis (BCA) Software—Riverine Limited Data Module, commonly used for flood projects, which is also used for ice storms. IPL denotes mitigation cost with descriptions of number of services to convert and unit price basis documentation, inclusive of base year of cost, mitigation project useful life, and economic discount factors. The frequency-damage method of limited data module shows how often natural hazard events occur and how much damage and loss occur as a result of the event, before and after mitigation to determine mitigation benefits: specifically economic impact of loss of electric power, physical damages, casualties, and loss of function by days.

By combining details and documentation, IPL proved its mitigation project reduces risk and saves money. FEMA awarded IPL \$1.5 million in HMGP funding to convert over 1,200 residential utility services underground. SEMA administered the funds.

As other residential customers were still at risk, IPL utilized similar strategies and successfully applied for and has been awarded five other FEMA grants including two Pre-Disaster Mitigation (PDM) grants. FEMA’s PDM grants provide funds to state and local governments to implement mitigation plans and projects to reduce risks to life and property prior to disaster events. PDM grants are awarded on a competitive basis and FEMA can fund up to 75 percent of the project cost.

IPL has been awarded six FEMA grants totaling nearly \$11 million in funding to bury overhead electric distribution lines for more than 9,000 at-risk residential customers. The company continues to vie for other mitigation grants.

“I’m excited about moving overhead service lines underground, and I’m on board as long as needed. In my entire career here, I’ve not experienced a more positive program.

The conversion has been well received by the community, people are asking for the service, the council is applauding it,” Looney exclaimed. “It’s a new era; the technology is here and the industry should make policies and find ways to benefit customers through underground services. Converting every home in Independence

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won't happen in my lifetime, but it is coming.”

And the move to convert prevails seeing that IPL requires underground utility services for new customers, additions, upgrades; and customers who received multiple tree and power line damages following storms. In some cases the company subsidizes customer expenses to convert. Over \$1 million of the annual budget is earmarked for utility conversion projects especially along roadways that will benefit the public at large.

“If an ice storm hits, we'll shave considerable time off our restoration, and far more people will have lights faster. I'm convinced that our work through FEMA's mitigation funds makes the community far better off than in 2002,” said Looney. “I can't promise you won't ever be out of lights, but we certainly can do things to reduce it.”