BROWNFIELD REDEVELOPMENT IN TENNESSEE

TN Department of Economic & Community Development

Center for Economic Research in Tennessee (CERT)

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October 2017

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INTRODUCTION

Increasingly, brownfields redevelopment has become an important part of economic development and community revitalization strategies in Tennessee. Brownfields are properties which may contain real or perceived contamination or hazardous substances that hinder their redevelopment or re-use. Many brownfields are under-utilized or abandoned facilities in industrial areas with a history of manufacturing. Other common types of brownfields include old mills and factories, junkyards, former drycleaners, railyards, and abandoned gas stations, but small residential plots with suspected contamination may also be considered brownfields. According to the Environmental Protection Agency, the actual presence of hazardous material is not necessary for a property to be a brownfield.

Redevelopment of brownfields provides many advantages to communities, including an increased tax base and property values.[1] Brownfields can negatively impact property values by making a neighborhood seem undesirable to live or work in. Abandoned properties also attract vandalism and illegal dumping. Studies have shown that properties in close proximity to a brownfield can lose up to 15-30% in value.[2] By redeveloping these blighted properties, communities can turn a neighborhood "eyesore" into an engine for economic growth. On average, brownfield cleanup leads to a 15% increase in local housing prices.[3] Redevelopment also leads to job creation, which is especially beneficial for communities who have been most impacted by the decline in manufacturing. For every $10,000 spent on brownfield cleanup, one permanent job is created in the area.[4] In Minnesota, for example, brownfield redevelopment programs, very similar to that in Tennessee, have led to $44 in private investment for every $1 leveraged and the creation of 104,000 jobs.

Brownfield redevelopment also improves the health and environmental quality of communities. Repurposing existing properties reduces the need for urban sprawl and preserves green and agricultural spaces.[5] Saving land through redevelopment has been shown to decrease air pollution, lessen traffic congestion and improve water quality by reducing storm-water runoff.[6] For all these reasons, brownfield cleanup has become an integral part of new smart growth strategies. Public funding for redevelopment yields a substantial return on investment. An analysis of over 1,000 brownfield cleanup projects across the United States demonstrates that the benefits of redevelopment greatly exceed the costs in public financing.[7] In some cases, states are reporting as high as a 1,400% return in direct state revenues from redevelopment projects.[8]

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[1] McCarthy, Linda. (2002). The brownfield dual land-use policy challenge: reducing barriers to private redevelopment while connecting reuse to broader community goals. *Land Use Policy*, 19(4). doi: 10.1016/S0264-8377(02)00023-6

[2] Simons, Robert. (2006). *When bad things happen to good property*. Washington, DC: Environmental Law Institute.

[3] Haninger, K., Ma., L., & Timmins, C. (2014). *The value of brownfield remediation*. NBER Working Paper No. 20296. doi: 10.3386/w20296

[4] Paull, E. (2008). *The environmental and economic impacts of Brownfields Redevelopment*. http://www.nemw.org/wp-content/uploads/2015/06/2008-Environ-Econ-Impacts-Brownfield-Redev.pdf. Date Accessed: Sep. 14, 2017.

[5] McCarthy, Linda. (2002). *The brownfield dual land-use policy challenge: reducing barriers to private redevelopment while connecting reuse to broader community goals*. Land Use Policy, 19(4). doi: 10.1016/S0264-8377(02)00023-6

[6] United States Environmental Protection Agency. (Jul. 14, 2017). *Brownfields Program Accomplishments and Benefits*. https://www.epa.gov/brownfields/brownfields-program-accomplishments-and-benefits. Accessed: Sep. 14, 2017.

[7] Haninger, K., Ma., L., & Timmins., C. (2012). *Estimating the impacts of brownfield remediation on housing property values*. Working Paper EE 12-08. http://sites.nicholasinstitute.duke.edu/environmentaleconomics/files/2013/01/WP-EE-12-08.pdf

[8] UW-Whitewater Fiscal and Economic Research Center & Redevelopment Economics. (2015). *The economic and fiscal impact of Wisconsin's brownfield investments*. http://dnr.wi.gov/topic/Brownfields/documents/bsg/uwwreport.pdf

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HISTORY OF TENNESSEE BROWNFIELD PROGRAMS

The Tennessee Department of Environment and Conservation's, (TDEC) Voluntary Cleanup Oversight and Assistance Program, also referred to as the Brownfield Voluntary Program (Program), was created by the Hazardous Waste Management Act of 1983 (TCA 68-212-224), as amended May 9, 1994. The Voluntary Cleanup Oversight and Assistance Program (VOAP) allows the Commissioner to enter into voluntary agreements with parties who are willing and able to conduct an investigation and/or remediation of Brownfield sites.[9] (Parties responsible for the contamination may also participate in the program, but these agreements are referred to as consent orders rather than voluntary agreements.)[10] The Program also offers the opportunity to deal with a broad range of contaminants, including petroleum, and to offer relief from liability under all environmental statutes promulgated by the State of Tennessee that is transferable to successors in title. The VOAP is Tennessee's state response program under the Federal Small Business Liability Relief and Brownfields Revitalization Act. As a result, program participants may receive protection from intervention by the EPA at eligible sites.

RESOURCES AVAILABLE FOR REDEVELOPING BROWNFIELDS IN TENNESSEE

The Voluntary Cleanup, Oversight and Assistance Program (VOAP) benefits not only the neighborhoods and communities with contaminated sites but also the parties who enter into these voluntary agreements. As part of the VOAP, the Commissioner may limit the participating party's liability for contamination identified and addressed under the voluntary agreement. In other words, purchasers of contaminated sites can avoid being held liable for contamination and from being sued for contamination which occurred prior to purchasing the property. Similar protections exist under Federal law in which property buyers can establish a defense against Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) liability if the site received an environmental assessment consistent with EPA's All Appropriate Inquiry rule, prior to purchase.[11]

Owning a contaminated property does not automatically make the owner liable for any damages. In circumstances where an owner had no reason to know of hazardous waste disposal on the property or took appropriate responses with respect to the waste, Tennessee law exempts the current owner from liability for legacy contamination.[12] However, determinations about an owner's knowledge of the situation are ultimately subjective, whereas successful cleanup efforts under VOAP result in liability protection for contamination and official agency judgment that the property is safe for redevelopment.[13] The Program offers innocent parties an agreement that 1) gives liability protection for real or perceived contamination; 2) provides protection for third party contribution; and 3) concurrence from the state's regulatory experts that a property is safe for future planned use(s). As such, owners of potentially contaminated properties have an incentive to participate in the VOAP to work with the State to put brownfield properties back into productive use. The liability

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[9] Tenn. Code Ann. §68-212-224.

[10] Tennessee Department of Environment and Conservation. *Voluntary Cleanup*. https://www.tn.gov/environment/topic/rem-brownfields-redevelopment-overview-voluntary-cleanup

[11] United States Environmental Protection Agency. (Jul. 28, 2017). *Brownfields all appropriate inquiries*. https://www.epa.gov/brownfields/brownfields-all-appropriate-inquiries

[12] Tenn. Code Ann. § 68-212-202. Part definitions.

[13] Tennessee Department of Environment and Conservation. *Voluntary Cleanup*. https://www.tn.gov/environment/topic/rem-brownfields-redevelopment-overview-voluntary-cleanup

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protection offered by the VOAP extends to future owners, site contractors, developers, insurers and tenants as well.[14] It is important to know that nothing in the Hazardous Waste Management Act (HWMA) relieves liability with respect to tort liability claims for damage to person or property arising from the contamination addressed by a voluntary agreement or consent order (TCA 68-212-224(a)(5)).

Neither Tennessee nor Federal law absolves the liability of the original polluter, who can still be sued for damages to people or property resulting from the contamination. According to HWMA, parties who can be held responsible even after cleanup efforts are the previous owner on whose watch the contamination occurred, anyone who disposed of the hazardous substances on the site, and anyone who transported the substance that was ultimately dumped on the property.[15] HWMA also allows for a governmental entity to be held liable, unless it acquired the property as a result of bankruptcy, abandonment, tax delinquency or similar circumstances.[16] Similarly, participation in the VOAP does not limit the participating party's responsibility for pollution that occurs after the cleanup agreement or contamination not identified during or addressed by the cleanup.[17]

There are several phases to the cleanup process. First, an environmental site assessment consistent with the All Appropriate Inquiry standard should be performed by a qualified environmental consultant on behalf of the voluntary party. This includes a "review of historical records, an inspection of the site and, quite often, collecting and analyzing soil and groundwater samples."[18] Additionally, TDEC will also request that the participating party provide a summary of all previous environmental assessments related to the site.[19] If the initial environmental assessment suggests a history of contamination or Recognized Environmental Conditions, an additional assessment in which a qualified environmental consultant collects samples of soil, soil gas, indoor air, groundwater, and any other potentially impacted media. Testing these samples determines the type and extent of contamination, level of risk posed by the site to workers and/or other future users of the property, and whether cleanup or mitigation is required.[20]

Parties who participate in this program must pay various program fees as shown in Table A, unless the Commissioner decides to waive part or all of these fees.[21] Revenue from the participation fees is placed into the cleanup assistance fund, which helps to pay for state oversight of brownfield cleanup efforts. (The remainder of VOAP is funded through federal cooperative agreements and the state general fund.[22]) These fees are in addition to any costs that may be incurred by working with

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[14] Tennessee Department of Environment & Conservation. *Addressing redevelopment of a brownfield project in Tennessee*. https://www.tn.gov/assets/entities/environment/attachments/rem_brownfields_voap-process.pdf
[15] Tenn. Code Ann. § 68-212-202. Part definitions.
[16] Ibid.
[17] Tenn. Code Ann. §68-212-224.
[18] Tennessee Department of Environment & Conservation. (2015). *Tennessee brownfields redevelopment toolbox*. https://www.tn.gov/assets/entities/environment/attachments/rem_Tennessee-Brownfields-Redevelopment-Toolbox.pdf
[19] Tenn. Code Ann. §68-212-224
[20] Tennessee Department of Environment & Conservation. *Addressing redevelopment of a brownfield project in Tennessee*. https://www.tn.gov/assets/entities/environment/attachments/rem_brownfields_voap-process.pdf
[21] Tennessee Department of Environment & Conservation. (2007). *Cost recovery assessments for sites in the Voluntary Cleanup Oversight and Assistance Program (VOAP)*. https://www.tn.gov/assets/entities/environment/attachments/rem_brownfields_voap-fee-structure.pdf
[22] Tennessee Department of Environment & Conservation. (2015). *Tennessee brownfields redevelopment toolbox*. https://www.tn.gov/assets/entities/environment/attachments/rem_Tennessee-Brownfields-Redevelopment-Toolbox.pdf

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an environmental consultant to produce the work plans and reports needed for investigating a brownfield.

Another resource available for addressing brownfields is through the US EPA (United States Environmental Protection Agency), where grants are available to fund environmental assessments and cleanups. The TDEC Brownfields Redevelopment Program staff members are available for guidance and technical support on these funding opportunities. Often times, these grants have no or little match required for communities who cannot cover the cost of environmental work (Table B).[1] Since 1995, the EPA has awarded over $12 million dollars in brownfields grants to Tennessee communities. A helpful tool to get started understanding redeveloping brownfields is the *Tennessee Brownfields Redevelopment Toolbox* which may be found on TDEC Division of Remediation's website.

TABLE A

VOAP PROGRAM COSTS AND FEES		
	Cost	**Description**
Program Entry	$750	Initial VOAP application fee, time associated with the review and/or evaluation of assessment data (sites which require no additional action after this stage do not result in additional costs)
Site Characterization	$2,000	Reviewing, modifying, and/or approving a submitted work plan for supplemental site investigation, including overseeing the fieldwork and review of associated report for additional site characterization.
/Remediation/Corrective Action	$2,500	Reviewing, modifying, and/or approving a submitted work plan, for overseeing the field implementation of the work plan and review of associated report for a planned corrective action. A Soil Management Plan or a Vapor Intrusion Mitigation Work Plan to be implemented during site redevelopment is included in this phase of work.
Risk Assessments	$2,000	Reviewing, modifying, and approving/disapproving a formal, comprehensive assessment of the risks posed by contamination in soil and groundwater in support of alternate cleanup levels.
Vapor Intrusion Evaluation	$2,000	Reviewing, modifying, and/or approving a submitted Work Plan for a site investigation specific to the evaluation of the potential for vapor intrusion including overseeing the fieldwork and review of the associated report.
Land Use Restriction	$500	One-time assessment for sites requiring land use restrictions (only applies if parties are not seeking a Brownfield Agreement, otherwise the charge is not separate from the Voluntary Agreement fee)

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Voluntary Agreement/Consent Agreement	$3,000	Reviewing, modifying, and/or approving a voluntary agreement/consent order, completion of which leads to a release of liability for areas where investigation and cleanup is conducted
	Cost	**Description**
Annual Assessment	$3,000	Annual charge for ongoing project oversight if the site remains in the program for more than a year beyond the date of application.

Source: Tennessee Department of Environment & Conservation. (2007). *Cost recovery assessments for sites in the Voluntary Cleanup Oversight and Assistance Program (VOAP).* https://www.tn.gov/assets/entities/environment/attachments/rem_brownfields_voap-fee-structure.pdf

TABLE B

EPA Brownfield Grant Programs			
	Maximum Funding Amount	**Performance Period**	**Description**
Assessment	$200,000 - $600,000	3 years	Funding for a grant recipient to inventory, characterize, assess, and conduct planning and community involvement related to brownfield sites
Revolving Loan Fund	$1,000,000	5 years	Funding for a grant recipient to capitalize a revolving loan fund and to provide sub-grants to carry out cleanup activities at brownfield sites
Cleanup	$200,000 (with 20% cost share)	3 years	Funding for a grant recipient to carry out cleanup activities at brownfield sites
Environmental Workforce Development and Job Training	$200,000	Varies	Provides funding to recruit, train, and place predominantly low-income and minority, unemployed and under-employed residents from solid and hazardous waste-impacted communities in full-time, sustainable, employment in the environmental field, including a focus on assessment and cleanup activities.

Source: United States Environmental Protection Agency. (Jul. 27, 2017). *Types of brownfields grant funding.* https://www.epa.gov/brownfields/types-brownfields-grant-funding

TDEC recommends that participating parties meet with Brownfield Voluntary Program staff to reach a common understanding about the environmental condition of the property and the proposed reuse before entering into a voluntary agreement with the State. It is also recommended that these parties seek the counsel of an environmental attorney and consultant to review the content of the agreement. TDEC allows for some flexibility in the terms of the agreement based on property-specific considerations. [23] Finalization of the agreement occurs after public notice of has

[23] Tennessee Department of Environment & Conservation. *Addressing redevelopment of a brownfield project in Tennessee.* https://www.tn.gov/assets/entities/environment/attachments/rem_brownfields_voap-process.pdf

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been given and a 30-day comment period has passed, pursuant to Title 4, Chapter 5 of the Uniform Administrative Procedures Act. [24]

Agreements under VOAP outline the specific steps that parties must complete to receive liability protection, which can include cleanup, redevelopment plans, land-use restrictions, and other activities.[25] The most common type of cleanup seen in recent brownfield projects is removal of contaminated soil and covering or capping the contaminated area.[26] In some cases, because of spills, historic disposal methods, dumping, or releases, chemicals may have reached the soil or groundwater beneath a building. Vapors from some chemicals may migrate from the underlying soil and groundwater into the building space, similar to radon gas entering into buildings. If this has occurred, vapor intrusion migration may be required to ensure the safety of workers at the property. For asbestos and lead-based paint contamination, property developers should take extra precautions during the demolition process. Sometimes, total cleanup is not required due to risk evaluations, the impracticability given the project scope, or the fact that total cleanup is cost-prohibitive. Institutional Controls (ICs) are implemented in these situations to protect the health and well-being of communities. Examples of ICs include land use restrictions, prohibitions on groundwater use or soil disturbance, special building construction requirements (i.e. vapor intrusion mitigation), and implementation of TDEC-approved development plans. Tennessee conducts a review of IC sites every five years.[27] TDEC employs a pragmatic, risk-based approach in which the agency recommends an appropriate course of action based on the specific circumstances of the brownfield. This approach to cleanup ensures the site is safe for human health and the environment without wasting money on unnecessary measures.

After participants have completed all actions required by the agreement, the Commissioner issues a letter to the participants stating that the obligations of the voluntary agreement have been met and no further action is required.[28] Property owners can then present the voluntary agreement to potential buyers and lenders as proof of liability protection.[29]

TDEC has also worked with parties who may not need a formal agreement or desire no liability protections. In these cases, the participating party may send an application and TDEC Brownfields Program staff will review the data presented. As appropriate and after review, DoR may issue a letter of no additional action. The letter of no additional action does not carry or imply that liability protection has been extended to the applicant, only that the State has reviewed the data provided and agrees with the conclusion and recommendations of the report(s) reviewed. In some cases TDEC may ask that a land use restriction be placed on the property.

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[24] Tenn. Code Ann. §68-212-224
[25] Tennessee Department of Environment & Conservation. *Addressing redevelopment of a brownfield project in Tennessee*. https://www.tn.gov/assets/entities/environment/attachments/rem_brownfields_voap-process.pdf
[26] Tennessee Department of Environment & Conservation. (2015). *Tennessee brownfields redevelopment toolbox*. https://www.tn.gov/assets/entities/environment/attachments/rem_Tennessee-Brownfields-Redevelopment-Toolbox.pdf
[27] Tennessee Department of Environment & Conservation. (2015). *Tennessee brownfields redevelopment toolbox*. https://www.tn.gov/assets/entities/environment/attachments/rem_Tennessee-Brownfields-Redevelopment-Toolbox.pdf
[28] Tenn. Code Ann. §68-212-224
[29] Tennessee Department of Environment & Conservation. *Addressing redevelopment of a brownfield project in Tennessee*. https://www.tn.gov/assets/entities/environment/attachments/rem_brownfields_voap-process.pdf

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TNECD PROJECTS LOCATED ON BROWNFIELD REDEVELOPMENT SITES (2011- Q3 2017)

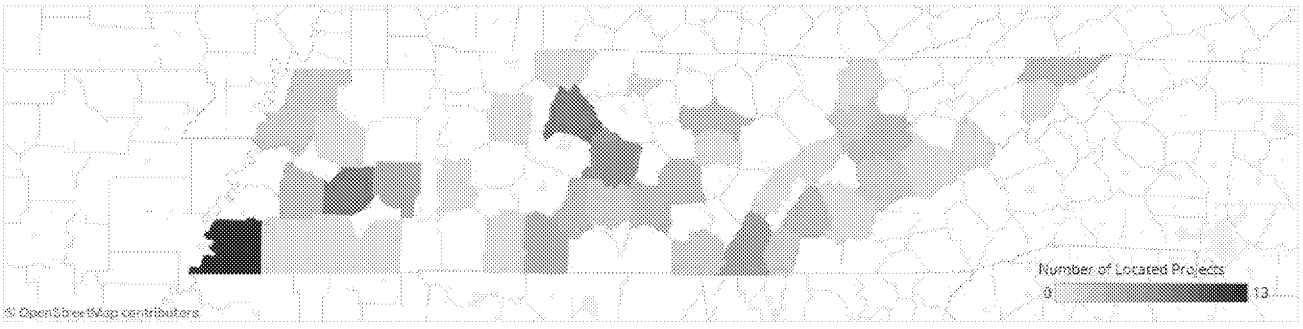
During Governor Haslam's administration, there have been 104 TNECD projects that have located on brownfield redevelopment sites. These projects have committed to 18,500 new jobs and $4.3 billion in capital investment in Tennessee.

There are many notable projects that have located on brownfield sites across the state. Since 2011, Nissan has announced four major projects at their facility in Smyrna resulting in 4,100 new jobs commitments and $485 million in capital investment. This facility is the most productive automotive manufacturing plant in North America. German automaker Volkswagen has announced two major projects at the company's production facility in Chattanooga during Governor Haslam's administration. These projects resulted in 3,000 new job commitments and $600 million in announced capital investment. In Pulaski, Italian-based Magneti Marelli announced projects in 2012 and 2015 that are expected to create 1,250 new jobs with over $103 million in capital investment. Additional case studies are outlined at the end of this report.

A majority of TNECD projects located at brownfield redevelopment sites have been expansions of existing locations. 77 projects fall into this category, resulting in 13,559 new job commitments and $3.6 in new capital investment. Site development is a key aspect of landing projects in Tennessee. A limited inventory of greenfield sites creates an opportunity to redevelop brownfield sites for future economic development projects. These sites often have infrastructure already in place that allows for less up-front capital investment from state and local governments. As the 77 TNECD expansion projects show, once a site has been redeveloped and a company locates at the site, substantial future investment can occur.

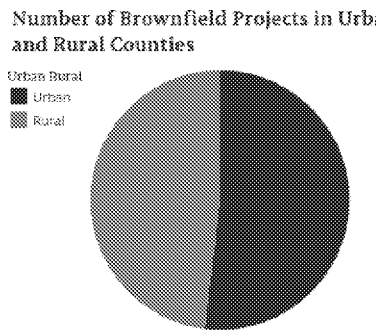
The Center for Economic Research in Tennessee (CERT) has developed a dashboard illustrating Tennessee's business expansion and recruitment projects on brownfield sites: http://tn.gov/transparenttn/article/openecd-project-activity-on-brownfields

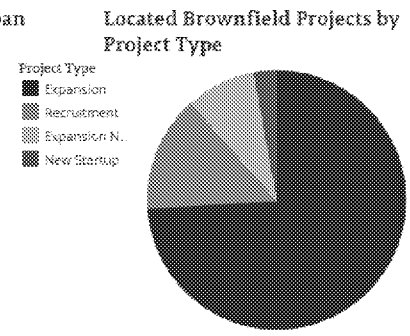
Located Project Commitments on Brownfield Sites

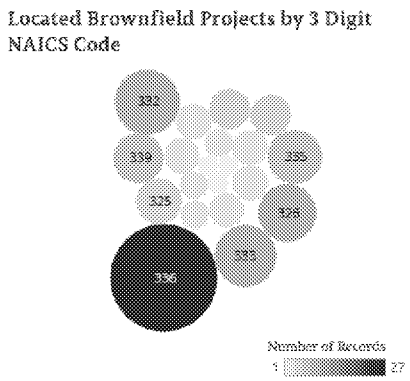


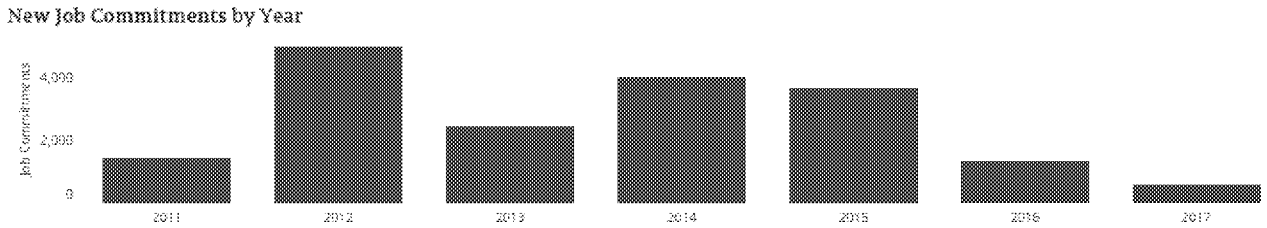
** Projects that do not have an address will not appear on the map. Some companies that are in the process of new development may not have an address due to construction on an undeveloped site.*

104	18,502	$4,319,641,268
Number of Projects	New Job Commitments	Capital Investment









ECONOMIC IMPACT AND RETURN ON INVESTMENT OF TNECD BROWNFIELD PROJECTS (2016-Q3 2017)

Since the beginning of 2016, TNECD has announced 16 projects located on sites that have participated in TDEC's brownfield program. These projects are expected to create 1,892 new jobs in the state and generate $478,825,933 in capital investment. The majority of these projects involve the manufacturing and automotive industries. Over the last six years, TNECD's brownfield-related efforts have been mostly focused on these industries, accounting for 63% of the overall number of projects. The largest projects by job commitments include Yorozu Automotive Tennessee (435 job commitments), Stanley Black and Decker (256 job commitments) and Rockline Industries (250 job commitments).

TNECD Brownfield Projects (2016 - Q3 2017)				
Company	**Industry**	**New Jobs**	**Capital Investment**	**Project Location**
Yorozu Automotive Tennessee, Inc.	Automotive	435	$0	Warren
Stanley Black and Decker, Inc.	Manufacturing	256	$29,117,899	Madison
Rockline Industries	Manufacturing	250	$40,300,000	Hamblen
Troxel Company	Manufacturing	177	$3,784,000	Fayette
Smith & Nephew, Inc., Orthopedic Division	Healthcare & Medical Devices	142	$81,754,186	Shelby
E & E Manufacturing of Tennessee, LLC	Automotive	123	$23,500,000	McMinn
United States Stove Company	Manufacturing	78	$4,200,000	Marion
Teknor Apex Tennessee Company	Chemicals, Plastics & Rubber	72	$908,000	Haywood
Telos Global	Automotive	63	$32,055,000	Campbell
JTEKT Automotive Tennessee - Vonore, LLC	Automotive	50	$218,450,000	Monroe

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TNECD Brownfield Projects (2016 - Q3 2017)				
Company	Industry	New Jobs	Capital Investment	Project Location
Teknor Apex Tennessee Company	Chemicals, Plastics & Rubber	50	$32,200,000	Haywood
Maxwell Industries, LLC	Manufacturing	50	$1,865,000	McMinn
Novus Advanced Manufacturing LLC	Manufacturing	47	$1,950,000	Lawrence
Morgan Steel Inc.	Transportation, Distribution & Logistics	38	$2,110,000	Shelby
Lisega, Inc.	Manufacturing	33	$5,300,000	Sevier
Mueller Refrigeration Products Company	Manufacturing	28	$1,331,848	Trousdale

These projects will have a positive effect on the Tennessee economy, generating both direct and indirect economic benefits for the state. The Center for Economic Research in Tennessee (CERT) conducted an analysis of these commitments to estimate the anticipated economic and fiscal impacts the projects will have on the state over a 10-year period. [30]

TNECD Brownfield Projects (2016 - Q3 2017)			
	Direct Impacts	Indirect and Induced Impacts	Total Impacts
New Jobs	1,892	3,730	5,622
New Incomes	$655.3M	$1.0B	$1.6B
Economic Output	$5.1B	$6.3B	$11.4B
Taxable Sales and Purchases expected in the State	$628.1M	$298.3M	$926.4M

The projects are projected to create over 5,600 jobs for Tennesseans over a 10-year time period. This includes 1,892 direct job commitments created through the location of these projects in the state, as well as, 3,730 indirect and induced jobs created in the regional economy in support of these locating companies. These jobs are expected to generate $1.6 billion in new income for Tennessee residents over the 10-year time period. This includes $655.3 million in new incomes created directly from the locating projects and $1.0 Billion in the regional economy in support of the direct growing business activity.

The analyzed projects are projected to generate $11.4 billion in economic output through direct, indirect, and induced economic activity in the state over a 10-year time period. The generated economic output includes $5.1 billion in direct activity created by the projects once they become fully operational. Economic output is the value of goods and services produced in the state as a result of the project. Economic output can be thought of as the new revenue generated by the direct business and spin-off businesses. Nearly every sector of the state's economy will receive a positive impact as a result of the increased project activity. The manufacturing sector will receive the largest employment impact with an additional 2,600 estimated jobs to be created as a result of these

[30] Model Information: This analysis utilizes a customized impact model developed and supported by economic consulting firm Impact DataSource. The projections reflect impacts occurring over a 10 year time period, from the time the projects establish operations. CERT's analysis relies on prospective estimates that may not be realized. The economic impact estimates are based on the Regional Input-Output Modeling System (RIMS II), a widely used regional input-output model developed by the U. S. Bureau of Economic Analysis.

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projects. Other sectors impacted include Health Care and Social Assistance, Professional, Scientific & Technical Services, Retail Trade, and Wholesale Trade. In addition, CERT estimates various taxable sales and purchases from these projects to total $926.4 million over a ten-year period in the state. Taxable sales and purchases include activity associated with the projects and worker spending in the community. Direct taxable sales and purchases from the projects are estimated to total $628.1 million over a 10-year period.

CERT also estimates the anticipated fiscal benefits, costs and net benefits of the incentivized TNECD projects located on sites that participated in TDEC brownfield program. CERT projected these fiscal benefits, costs and net benefits to the state over a 10-year period. Fiscal benefits for the State of Tennessee include the generation of new taxes including sales, franchise, excise and miscellaneous taxes and user fees. Local benefits, including property taxes generated from each project, are not included in the analysis. The projects are expected to generate $51.6 million in new tax collections and fees for the state over a 10-year period. The fiscal benefits are net of assumed tax credits available to the analyzed projects. In addition, each project may result in new residents moving to the state. The new business and resident growth resulting from the incentivized projects may generate additional costs to the state for providing services. These services include transportation and infrastructure, education, law and safety services, health and social services, and other government services. CERT estimates that the state will incur a cost of an estimated $9.0 million over a 10-year period to provide new government services as a result of the analyzed projects. Therefore the TNECD projects located on brownfield redevelopment sites are estimated to generate $42.6 million in net fiscal benefits to the state over a 10-year period. Net benefits represent additional tax revenue generated, less costs of additional services to new residents and businesses.

CASE STUDIES

East Tennessee: Former Foamex property

The former Foamex plant is located in Morristown, Hamblen County, Tennessee. This vacant industrial property covers 45 acres and was developed with a 232,000 sq. ft. warehouse/manufacturing building. The Site was undeveloped until the 1960s or early 1970s, when the plant was constructed in order to conduct foam manufacturing operations. Morristown Foam Corporation was later sold to Recital Foam which ultimately reformed as Foamex L.P. in 1990. In the early 2000s, foam manufacturing operations were discontinued and the Site was utilized for the cutting and shaping of foam manufactured at other locations until the early 2010s, when operations at the Site were discontinued.

Since the early 2010's, the Site has been unused. The property is served with electric, water and sanitary sewer and a rail spur and represented an opportunity for redevelopment. After remaining vacant, the Morristown Area Chamber of Commerce purchased the property. TDEC worked with the Morristown Area Chamber of Commerce to ensure that redevelopment or expansion of the facility could be done safely and without liability for past contamination.

As a result, Rockline, a producer of wet wipes and coffee filters, has invested $40 million in Hamblen County and created 250 new jobs while revitalizing a shuttered industrial property. Currently, the existing building onsite is undergoing an expansion that will ultimately result in a 435,000-square-foot state-of-the-art FDA-registered facility. The new plant is expected to be operational beginning in 2018.

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Middle Tennessee: Jackson Kayak, Sparta, TN Brownfields Redevelopment Success

The Upper Cumberland Development District (UCDD) is located in Cookeville, TN but encompasses 14 rural counties. In 2009 and 2013, the UCDD was the recipient of EPA 104(k) Brownfields Community Wide Assessment Grants. Under these grants, Phase I and II Environmental Site Assessments were completed at a former lighting manufacturing plant in Sparta, TN (White County) to identify any recognized environmental conditions. This former lighting manufacturing plant has sat vacant since 2010. Jackson Kayak, one of the largest goods exporters in Tennessee, needed to expand its operations. By using the EPA grant funds, UCDD was able to identify the vacant lighting manufacturing plant as a potential location for the expansion.

The 300,000 square foot building was set to be sold for salvage, but by working with the Tennessee Department of Environment and Conservation (TDEC), the TN Economic and Community Development Agency, and the Upper Cumberland Development District, Jackson Kayak was able to enter into a Brownfield Voluntary Agreement with the TDEC Division of Remediation. This agreement allowed Jackson Kayak to renovate the facility for their use without assuming liability from the previous owner. Jackson Kayak purchased the property and invested over $4 million to expand production of recreational whitewater and fishing kayaks and to manufacture Orion coolers, a high-end line of cooler products. Connecting EPA grant funds to assess the property and the TDEC Brownfields Redevelopment Program was key to limiting environmental liabilities. This allowed Jackson Kayak to expand into an existing building, while remaining in White County, and creating 250 new full-time jobs in this town of 5,000 people.

Middle Tennessee: Nissan USA Redevelopment Project

Nissan's roots in Tennessee extend back to 1983 when the automotive company opened a vehicle assembly plant in Smyrna.[31] This plant, which produces over 650,000 vehicles per year, is considered the most productive automotive manufacturing facility in North America.[32] In 2015, Nissan decided to expand its Smyrna operations and purchased a 76.22-acre property on which to build the new facility. This vacant property had been used for industrial waste dumping in previous decades. The developer, in partnership with the Division of Remediation, tested the soil and water to determine if contamination was still present in the sinkholes on the property. The developer, using guidance from TDEC, properly addressed the sinkholes allowing for construction of the new building.[33] Vapor intrusion mitigation was incorporated into the foundation design for the 1.5 million square foot facility constructed on the property. The $160 million expansion created 1,000 jobs in the area and centralized Nissan's logistics operations.[34] The new facility increased company productivity by consolidating several of Nissan's other warehouses and making the supply chain

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[31] Nissan Tennessee. (2017). *About Nissan*. Date Accessed: Sep. 23, 2017. http://nissan-tennessee.com/about-nissan/

[32] Area Development. (2015). *Nissan North America plans $160 million expansion at Smyrna, Tennessee, Assembly Plant*. Date Accessed: Sep. 23, 2017. http://www.areadevelopment.com/newsItems/3-17-2015/nissan-north-america-supplier-park-smyrna-tennessee784554.shtml

[33] Tennessee Department of Energy & Conservation. *Nissan USA redevelopment project, Smyrna, Tennessee*. Date Accessed: Sep. 23, 2017. http://www.tennessee.gov/assets/entities/environment/attachments/rem_success_smyrna-nissan-usa-redevelopment-project.pdf

[34] Tennessee Department of Energy & Conservation. *Nissan USA redevelopment project, Smyrna, Tennessee*. Date Accessed: Sep. 23, 2017. http://www.tennessee.gov/assets/entities/environment/attachments/rem_success_smyrna-nissan-usa-redevelopment-project.pdf

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more efficient.[35] The Nissan USA Redevelopment Project is a prime example of how redevelopment benefits both communities and the companies who invest in brownfields.

West Tennessee: Former Salvage Yard

The City of Union City wanted to expand their water treatment plant facility and had a prime location in mind, adjacent to the existing water treatment plant. This adjacent property housed lumber sheds in the late 1800s and early 1990s, and from the 1940s until at least 1992 the property was the home to a salvage yard, then sat vacant. This adjacent property had some previous environmental work completed, including removal of lead and petroleum hydrocarbon contaminated soils that led to receiving a No Further Action letter through the Tennessee Department of Environment and Conservation's (TDEC) State Remediation Program (SRP) in 1999. But since so much time had passed since due diligence had occurred, a new Phase I ESA was completed utilizing Union City's EPA 104(k) Community Wide Brownfields Assessment Grant, which the City received in 2013. In 2014, a new Phase I ESA and Soil Management Plan was completed prior to site redevelopment so that in case unexpected soil conditions were discovered, a plan would be in place and allow construction to continue in a safe manner, to build a new clearwell.

The City of Union City Water Department now uses the Site for a new clearwell that measures 62.5 feet wide by 80 feet long by 12 feet deep. This new clearwell is connected to the existing Water Department facility located adjacent to the former salvage yard property. Other site improvements include a 20 foot wide by 50 foot long gravel driveway on the northeast portion of the property, a four foot wide sidewalk and six foot tall chain link fence around the clearwell in the central portion of the property, and a surface water drainage system that encloses the clearwell on three sides and discharges through a rip-rap drainage gallery on the southwest portion of the property.

The City of Union City leveraged $500,000 for the construction of the water storage tank system going on the site. TDEC Division of Remediation staff provided technical oversight utilizing EPA 128(a) brownfields funding.

CLOSING SUMMARY

The Brownfield Voluntary Program plays an integral role in the redevelopment of properties that have fallen out of use. EPA Brownfield grants facilitate economic growth and encourage meaningful investment in communities. Utilizing the resources that the State provides and bringing together the skills of many stakeholders, brownfields are being transformed into community assets across Tennessee. In Tennessee, brownfield redevelopment is, at its heart, economic and community development with improved environmental outcomes.

[35] Southern Automotive Alliance. (2016). *A need for expansion at Nissan.* http://www.southernautomotivealliance.com/Southern-Automotive-Alliance/October-2016/A-Need-for-Expansion-at-Nissan/

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