

TECO turns

T THERMAL ENERGY CORPORATION

A TEXAS MEDICAL CENTER INSTITUTION

## **INSPIRED** TO LEAD

Thermal Energy Corporation (TECO) is inspired to lead by those who were inspired to lead, the founders of the Texas Medical Center (TMC) who dedicated themselves to advocating for public health.

The founders' passion for their cause has passed from generation to generation, creating the largest medical center in the world and a focal point for innovation. TECO is grateful for their all-encompassing vision, which included their energy future.

TMC institution leaders were behind the startup of the district energy system now serving the medical center campus. And they took it the next step by organizing a not-for-profit cooperative to acquire the system in 1978, giving birth to TECO.

Thanks to their foresight, TECO today looks back on four decades of growth. Early on it embraced the Texas Medical Center's penchant for quality, hiring the best-of-thebest employees to chart its path.

In 2018, TECO's 40th anniversary year, employees comprising 235 years' worth of knowledge announced their retirements.

"Inspired to Lead" is dedicated to those who devoted their careers to chilled-water and steam service on the TMC campus – and the accomplished individuals who are the next to lead, supporting our customers every step of the way.



## Texas Medical Center Heating and Cooling Services Cooperative Association Board

--- TECO's first board of directors 1978 ---

President (now chair): Ralph S. Kristoferson The University of Texas System

Vice president (now vice chair):
Dr. Richard T. Eastwood
Texas Medical Center Inc.

Secretary:
E.R. Gilley
The University of Texas MD Anderson Hospital and Tumor Institute

Treasurer:
Paul G. Bell Jr.
St. Luke's Episcopal Hospital

G. Charles Franklin
The University of Texas
Health Science Center at Houston

George Bellows

(as Children's Hospital

Robert Benefield
Texas Woman's University

**Paul Jordan** Houston Academy of Medicine

First director (now president/CEO) Henry Kroeger





Bradley N. Howell

Chairman, TECO Board of Directors Representative. Texas Medical Center Chairman & CEO, Lodestar Logistics



Donald P. DeWalch

Vice Chairman, TECO Board of Directors Representative, Texas Children's Hospital Director, DeWalch Technologies Inc.



Philip D. Aldridge

Associate Vice Chancellor for Business Development The University of Texas System



Kevin Dillon

Senior Executive Vice President, Chief Operating and Financial Officer The University of Texas Health Science Center at Houston



Russ Korcuska

Vice President Facilities Engineering and Construction Memorial Hermann Health System



Ben Melson

Senior Vice President & CFO The University of Texas MD Anderson Cancer Center



Barry Nelson, Ph.D.

Vice President for Finance and Administration The Texas A&M University System Health Science Center



Bruce Phillips

Partner, PinPoint Commercial, LP Representative, CHI St. Luke's Health



Robert Ramirez

Associate Vice President Facilities Management and Construction Texas Woman's University



Stephen K. Swinson, PE

President and Chief Executive Officer



## ALTERNATE DIRECTORS

Bill Bussman Texas Woman's University

Denise Castillo-Rhodes Secretary, TECO Board of Directors The Texas Medical Center

> Bert Gumeringer Texas Children's Hospital

Michael Hatton Memorial Hermann Health System

Rayellen J. Milburn The Texas A&M University System Health Science Center

Spencer Moore The University of Texas MD Anderson Cancer Center

> Dan Sharphorn, JD The University of Texas System

William "Wes" Stewart The University of Texas Health Science Center at Houston

PRESIDENT AND CEO



## **2018** ANNUAL REPORT

TECO Board of Directors (inside cover)
To our customers and friends
Shining star in Texas  Harris Health System - Ben Taub Hospital
Immunologist awarded Nobel Prize The University of Texas MD Anderson Cancer Center
First PTSD center focused on veterans, families The University of Texas Health Science Center at Houston
Challenging, groundbreaking training  Texas Woman's University
Engineering medicine program first to be accredited  Texas A&M University and Houston Methodist Hospital
Charting a course  Jason Berrio, PE
Training ground  Larry Null, PE, and Melissa Ripple
A legacy of excellence  Bruce Turner, PE, CPE, and Mike Manoucheri, PE
Maintaining with pride  Charlie Michalak and Mycah Jewell, PE
Doing it right  Johnny Runyan and Mike Handorf
Constructing the future  Steve Lehr and Jess Harper, PE, CEM, LEED AP
Master of purchasing  Jim Daniel
Performing to serve - FY2018 Accomplishments
Measuring up - FY2018 Metrics
Reporting in - FY2018 Financials and Operating Statistics
Inspired to lead - The TECO Team

## THE ENERGY BEHIND WHAT'S NEXT

Mission: Provide reliable and economical thermal services to the institutions of the Texas Medical Center.

On the cover: TECO's new leaders, left to right - Mike Manoucheri, Jess Harper, Mike Handorf, Melissa Ripple and Mycah Jewell, plus Jason Berrio, right.



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Stephen K. Swinson, President and CEO, and Bradley N. Howell, Chairman

## To our customers and friends in the Texas Medical Center and our energy industry colleagues

As Thermal Energy Corporation marked its 40th anniversary in 2018, we could not help but reflect on what has changed and what has stayed the course over the decades.

Since TECO's acquisition of the campus chilled-water and steam system in 1978, both TECO and the Texas Medical Center have grown. In 1978, institutions on the Texas Medical Center campus logged 1.5 million patient visits and had 4,127 licensed beds and 23,219 employees. Today TMC member institutions see 10 million patients annually, have 10,500 beds and employ 110,000 people.

The implications of such exponential growth explain TECO's path over the years, staying ahead of our customers' expansion plans to ensure service availability and reliability.

Forty years ago, TECO had one energy plant with 30,000 tons of chilled-water capacity and 625,000 lb/hr of steam capacity. Now TECO has two interconnected plants with a total of 120,170 tons of chilled-water capacity and 980,000 lb/hr of steam capacity, plus 64 MW of electrical generating capacity.

Potential growth was one of the drivers that established our district energy system in the late 1960s. TMC institution leaders were eyeing expansion and ways to optimize their use of premium space. They knew they could rid themselves of chillers, boilers and costs not

directly related to patient care if they could connect to a centralized cooling and heating system. They organized and selected Houston Natural Gas Company to build and operate a central plant in 1969, giving TMC institutions a future option to purchase.

In the 1970s, energy prices rose. The group agreed that it was time to buy the system and set up a not-for-profit ownership to reduce costs and give them more control over expansion. They organized the Texas Medical Center Heating and Cooling Services Cooperative Association (now known as TECO) that bought the system in May 1978. (See first board of directors inside front cover.)

Today, TECO's customer institutions share the same concerns. They want to use their building footprint and resources wisely. In FY2018, TECO helped by providing customers with nearly \$10 million in total rebates made possible by energy and operational efficiency. It enables institutions to redirect their resources to their core competencies – patient care, research and education.

Our customers' work has always motivated our employees, a number of whom are retiring as TECO reaches the 40-year milestone. They and their talented successors



Henry Kroeger, an experienced engineer formerly employed by
Lone Star Gas Company, was selected TECO's first director (president/CEO) in January 1978, about four months before the system's purchase. Board President Ralph Kristoferson knew that Kroeger had designed the thermal plant on The University of Texas at Dallas campus and convinced him to move to Houston to coordinate the handoff from Houston Natural Gas Company and run the plant.



are profiled in the pages that follow, demonstrating our commitment to a seamless and intentional leadership transition.

As the 40th anniversary of system ownership moves into 2019's 50th anniversary of system startup, it is a time of change and opportunity at TECO. We extend our gratitude to the TMC member institutions that helped found us, and the Board of Directors that continues to support us, making the TECO of today possible.

Stephen K. Surmin

Stephen K. Swinson, PE President and Chief Executive Officer

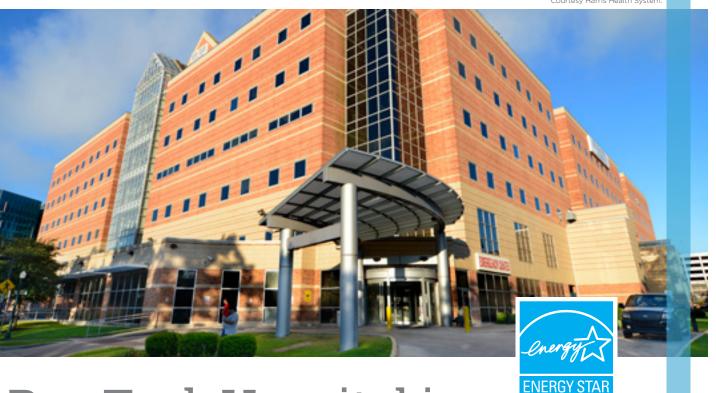
Brod Howell

Bradley N. Howell Chairman

The founders of the Texas Medical Center were **inspired**. By patients. By their students. By their families. By the future.

And TMC member institutions over the past 90-plus years have carried forth that banner, sometimes through major scientific breakthroughs, sometimes with a helping hand.

Thermal Energy Corporation salutes that commitment and is pleased to share here a handful of their stories – examples of how the institutions we serve are excelling and often changing lives forever.



## Ben Taub Hospital is shining energy star in Texas

## TECO &

HARRIS HEALTH SYSTEM

\*\*New TECO customer

Ben Taub Hospital: 2019\*\*

1,023,000 sq ft served

arris Health System's Ben Taub Hospital is reaching for the stars - and catching them. In 2018. Ben Taub received the U.S. Environmental Protection Agency's (EPA) ENERGY STAR® certification for the second year in a row. The facility is the only public hospital in Texas and one of only three hospitals in Houston to have earned this certification. Across the country, only 254 hospitals - 4.6% out of a total of more than 5.500 are ENERGY STAR certified.

To become certified, a building must perform in the top 25% of similar buildings nationwide in terms of energy efficiency. Building energy use is evaluated taking into account regional weather data, operating conditions, occupancy and other considerations. On average, **ENERGY STAR certified buildings** use 35% less energy, generate 35% fewer greenhouse gas emissions and are less expensive to operate than their peers.

With ENERGY STAR certification awarded annually, buildings must maintain their superior energy efficiency to continue qualifying for the honor. Reflecting the hospital's solid financial stewardship. Ben Taub has completed a number of mechanical upgrades contributing to its excellent energy performance: energy-efficient lighting, HVAC, water heating, refrigeration and kitchen equipment, and more.

The improvements have enhanced the comfort of patients, visitors and staff, while improving the hospital's health care environment and helping to protect the natural environment around us.







## MD Anderson immunologist awarded Nobel Prize

n the fight against cancer, doctors and patients have new weapons in their arsenal, thanks to the work of MD Anderson's Jim Allison, Ph.D., who was awarded the 2018 Nobel Prize in Physiology or Medicine for his groundbreaking discoveries. Allison received the world's premier honor for launching an effective new way to attack cancer by treating the immune system, not the tumor. He is chair of Immunology and executive director of the immunotherapy platform at The University of Texas MD Anderson Cancer Center.

Allison - MD Anderson's first Nobel laureate - studied the CTLA-4a protein that "puts the brakes" on the immune system's T cells. He discovered that when this protein is blocked, the "brakes are released," and the immune system is free to attack the cancer. Allison invented an antibody to CTLA-4, which led to development of the first

"immune checkpoint inhibitor" drug, Ipilimumab. The drug was approved in 2011 by the Food and Drug Administration for treating late-stage melanoma.

"His research has led to lifesaving treatments for people who otherwise would have little hope," said MD Anderson President Peter WT Pisters, M.D. "The significance of immunotherapy as a form of cancer treatment will be felt for generations to come."

Allison received his Nobel Prize from the King of Sweden at a December 2018 ceremony in Stockholm. The award is shared with Japanese immunologist Tasuku Honjo.

THE UNIVERSITY OF TEXAS **MDAnderson** Cancer Center

## TECO &

## THE UNIVERSITY OF TEXAS MD ANDERSON CANCER CENTER

\*TECO customer since

Lutheran Hospital Pavilion -

M.G. and Lillie A. Johnson Building: < 1979\*

Percy and Ruth Legett Jones Research Building: 1985\*

Main Building (Anderson Central, Anderson East, Anderson West): 1985\* backup / 1998\* full service

Charles A. LeMaistre Clinic / Margaret and Ben Love Clinic / R. Lee Clark Clinic: 1986\*

Rotary House Hotel: 1993\*

Albert B. and Margaret M. Alkek Hospital: 1997\*

John Mendelsohn Faculty Center: 2000\*

The George and Cynthia Mitchell

Basic Sciences Research Building: 2003\*

Lowry and Peggy Mays Clinic: 2004\*

Dan L. Duncan Building: 2004\*

T. Boone Pickens Academic Tower: 2010\*

Mid-Campus Building 1: 2010\*

Sheikh Zayed bin Sultan Al Nahyan Building for Personalized Cancer Care: 2013\*

7,803,000 sq ft served



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THE UNIVERSITY OF TEXAS **Health Science Center at Houston** (UTHealth)

\*TECO customer since

The TMC Library Health Sciences Resource Center: < 1979\*

School of Public Health -Reuel Stallones Building: < 1979\*

McGovern Medical School and Expansion: 1979 & 2006\*

Professional Building: 1979\*

Cyclotron Building: 1998\*

Cizik School of Nursing and

Community Center Building: 2004\*

Institute of Molecular Medicine -Fayez S. Sarofim Research Building: 2005\*

University Center Tower: 2005\*

2,601,000 sq ft served

ost-traumatic stress disorder (PTSD) knows no bounds. It can affect military veterans, crime victims, and people of all walks of life troubled by painful events. But now there is new hope from a first-of-its-kind treatment center with a team-based approach that cares not only for victims but their families.

Opened in March 2018, the UTHealth Trauma and Resilience Center at The University of Texas Health Science Center at Houston focuses on filling the gaps in conventional PTSD treatment. For example, the method recognizes the impact that veterans experiences in the service have on their support system, typically their spouse and children.

To treat veterans and their loved ones, the center brings together UTHealth specialists skilled in trauma-related mental health - including adult and pediatric physicians, psychiatrists, psychologists, therapists, social workers, addiction specialists and others.

The center was founded with a \$4 million state grant to study integrated care of veterans with PTSD. The funding was the result of legislation authored by Texas State Rep. Senfronia Thompson of Houston. Her bill established the study in coordination with the Texas Health and Human Services Commission, a partner organization with UTHealth in the Trauma and Resilience Center.

Texas is currently home to an estimated 1.4 million veterans - 200,000 in Harris County alone - who have servicerelated health needs.





## First PTSD center focused on veterans, families

## Texas Woman's University offers challenging, groundbreaking training



Courtesy Texas Woman's University

near-drowning victim. A person having a seizure. A homeless man facing toe amputation. Treatment decisions, ethical dilemmas and patient questions - all needing resolution now. This sounds like a real day in the life of a nurse at a busy hospital. Instead it's part of a simulated training environment at Texas Woman's University (TWU) where nursing students put their skills to the test as they approach graduation. The first-of-its-kind program is modeled after training developed by NASA for its teams supporting Space Shuttle missions.

The students "work" three 12-hour shifts over a 72-hour period in a hospital ward setting specially created for the simulation. The unit is outfitted with real hospital

equipment and populated with fellow students playing the scripted roles of patients (each with full medical records and diagnoses), their family members, and even chaplains and social workers.

The exercise gives students an invaluable opportunity to practice clinical skills and make mistakes – and learn from them – in a safe setting. It's a never-to-be-forgotten experience that is otherwise hard to gain before graduation.

The program was developed by TWU College of Nursing Associate Professor Emerita Connie Ayers, Ph.D., RN, with input from her husband, Andy Foster, a former NASA astronaut instructor. The feedback from program graduates? Overwhelmingly positive, helping prepare them for interviews and giving them confidence for a life-changing – and life-saving – career in nursing.

## TECO &

## **TEXAS WOMAN'S UNIVERSITY**

\*TECO customer since

Institute of Health Sciences-Houston Center
Original building: One of system's first customers in 1969\*
Current building: 2006\*

212,000 sq ft served



## **TEXAS A & M UNIVERSITY**

\*TECO customer since

Albert B. Alkek Institute of Biosciences and Technology: 1990\*

225,000 sq ft served

## HOUSTON METHODIST HOSPITAL

\*TECO customer since

Mary Gibbs Jones Building: <1979\*

Walter Tower: 2017\*

880,000 sq ft served

new kind of doctor - a "physicianeer"- will soon receive medical school training at Houston Methodist Hospital and the Texas A&M Health Science Center. Geared toward physicians with an engineering mindset, this innovative new program is called EnMed, Texas A&M University's new engineering medicine track.

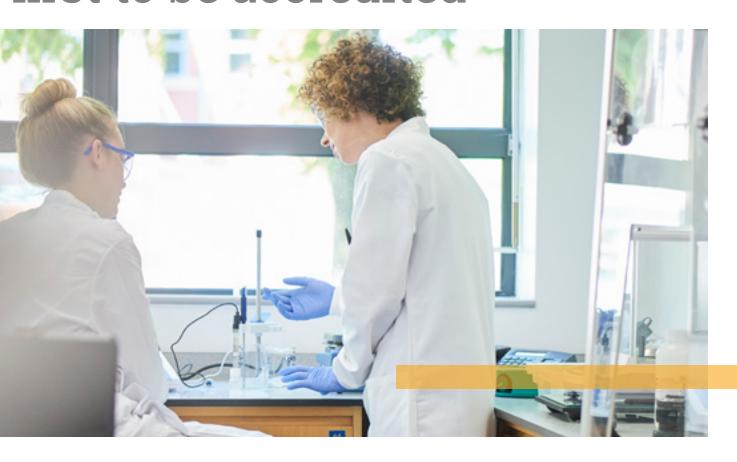
Starting in fall 2019, the program will allow students to earn both a doctorate in medicine and a master's degree in engineering in four years. EnMed was the first such program accredited by the Liaison Committee on Medical Education and is expected to be the nation's largest program of its kind.

EnMed - one of multiple paths to earning a Texas A&M medical degree - is designed for physicians who want to engineer technical solutions to address today's

greatest health care challenges. The curriculum emphasizes research and entrepreneurship, requiring students to invent something transformational and take it to market before graduation. Students admitted into the program will have a bachelor's degree in engineering or computer science (or another closely related field).

EnMed was developed in a partnership between the Texas A&M Colleges of Medicine and **Engineering and Houston Methodist** Hospital. The program will utilize instructional and research space in the hospital and Texas A&M Health Science Center's Institute of Biosciences and Technology, as well as other TMC member facilities.

## Engineering medicine program first to be accredited







"The story of TECO is not so much about the chillers, boilers, and pipelines that produce the heat and air conditioning for its customers as it is about the people who first led the way with innovative thinking about bringing district energy to the Texas Medical Center. And it is about those dedicated people who have continued striving to find better, more efficient, more environmentally favorable ways of providing economical thermal energy services to their customers."

William Henry Kellar

Thermal Energy Corporation: Dependable Energy for the Texas Medical Center



Thermal Energy Corporation has had fine leaders in its 40-year history. Over the past year, a number announced their retirements. They have contributed much and set the stage for a new set of individuals to carry forward TECO's commitment to reliability and customer service.

Following are profiles of 12 TECO leaders, including six retirees who comprise 235 years of institutional knowledge. Five are paired with the stellar individuals who are taking over their reins.

Our new leaders are dedicated, experienced and ready to serve.

# Charting a COURSE

Learning to lead, leading others

Jason Berrio, PE

**Vice President, Operations**Joined TECO 2017

:inspired

There is no single path to becoming an effective leader, but for Jason Berrio, it all began when he enlisted in the U.S. Navy right after high school. He soon found himself assigned to a nuclear-powered submarine, hoping to soak up the experience and later work in a nuclear power plant.

But nine years later when he re-entered civilian life, the nearby nuclear plant wasn't hiring, so Jason took a different tack. He decided to get his college degree in mechanical engineering. That wasn't just by chance. Jason had been inspired by a Naval lieutenant who struck him as smart and intriguing – and had a mechanical engineering background.

"That Navy officer really helped me draw a line between two points and set me on my path," says Jason. "But it wasn't all smooth sailing. I was a single dad. It was a challenge to juggle parenting, a job and going to school. But it worked, and I got my degree in three-and-a-half years."

We hold short weekly meetings to discuss how the plants are running and what's coming up for the week. Certainly it's good for efficient plant operation, but it's more than that. We get to know each other and become a team. That's really the core of it."

Ironically, Jason's first job out of college was at the same nuclear plant he had eyed years earlier. He steadily moved up the ranks from engineering to operations management over his 16 years at the South Texas Project. He also obtained his senior reactor operator license, one of fewer than 50,000 people in the U.S. to do so.

When approached by a TECO recruiter, though, Jason says it only seemed natural to apply for the job. "I've always been interested in plants that make chilled water and steam," he says. "It continues to feed my fascination with how things work."

As TECO's vice president of operations, one of Jason's critical responsibilities is to ensure compliance with the power generation standards of the North American Electric Reliability Council. He also oversees the purchase of natural gas, water and electricity.

Supervising more than two dozen employees, Jason draws upon his naval leadership skills and past involvement with the Boy Scouts. "I like leading people, I like developing leaders," says Jason. "I intend to inspire my team to do their very best work. We're all in this together."

## Iraining GROUNE

Paving the road for employee success

After experiencing a layoff from the turbulent oil industry in 1986, Larry Null decided to seek a job in a more stable market. Familiar with the Texas Medical Center, he had heard about a project engineer opening at TECO. He applied and got an interview. But when he

> arrived at what he thought was the plant, he mistakenly entered the adjacent laundry building instead.

"Once I was redirected, I headed farther down the drive," says Larry, who is

retiring in 2019. "Then I saw a gravel parking lot and a chain-link fence with some barbed wire on top. I caught sight of a small building and a plant with cooling towers. I was in the right place, but it didn't look like much. I still took the job."

While the TECO of 1986 was also reliable, it was dramatically different from TECO today. It had just one chilled-water and steam plant, and Larry was one of only three members of the engineering department. He started out as a project engineer and has since worn the hats of engineering manager, plant manager, vice president/executive director, and president before moving to his final position as senior vice president.

Larry led TECO through the challenges of a 50% increase in chilled-water production capacity, Y2K, Tropical Storm Allison and into a new ownership era. In the early 2000s, he and his team converted TECO from a cooperative to a not-for-profit corporation.

To enable expansion in the late 2000s, Larry coordinated relocation of the same laundry he visited the day he interviewed, making room for a new plant and thermal energy storage tank. He wrapped up his career developing TECO's comprehensive Operator Training and Certification Program, setting TECO on a new course.

"It's been a pleasure to be a part of TECO, working with so many dedicated people over the years," says Larry. "I have utmost confidence it will continue to be in good hands, even as some of us retire. We've brought on good people and trained them well. It's their time to lead."

retired:

**Senior Vice President** 

Larry Null, PE

I went to my first Houston Astros game when they were the Colt 45s playing in Colt Stadium. pre-Astrodome. pre-Minute Maid Park. I'm a big fan and am glad they are winning again. I've lived in Houston since I was three months old. so the Astros are my team."

I have a 'facilitative leadership' style, which emphasizes good listening and communication and invites employee collaboration to achieve our goals. It makes for good teamwork."

## Melissa Ripple

**Training Manager** 

It's hard to beat a program that shows employees they are valued, instills confidence, improves performance, makes advancement possible - and helps ensure service reliability. That's why TECO continues to invest in its employee training program, most recently hiring a full-time training manager, Melissa Ripple, in 2018.

Melissa worked closely with TECO veteran Larry Null as he transferred the Training Certification Program over to her. She dove right into her new job, working her way down the checklist of high-priority training initiatives. By design, previous training was equipment-focused. Now Melissa is developing specific programs for new operator hires and next will put overall operator and maintenance training programs in place.

She brings solid credentials to the task. After earning her mechanical engineering degree at The University of Texas at Austin, Melissa worked at the South Texas Project nuclear power station for 17 years. She started in the maintenance engineering department. Later she moved into plant operations, where she earned

her senior reactor operator license and served as a unit supervisor and work control manager. That's when her track began to change.

Her former manager saw her potential as a trainer and urged her to shift gears. She became a certified instructor accredited by the Institute of Nuclear Power's (INPO) National Academy for Nuclear Training and applied her skills in the training department. "I didn't think that training would be in my future," she reflects, "but it has been a great career choice. I love it."

Although others have supported her, Melissa's greatest inspiration is her dad. "My dad saw how much I liked math and science, and he encouraged me to pursue engineering. So that's just what I did, becoming the first person in my family to graduate from college."

By working closely with employees, Melissa hopes to inspire others to learn and grow. She has valued her time with Larry, soaking up his knowledge. "Larry knows everything about this plant," she says, adding with a laugh: "I keep telling him that he only thinks he's going to retire. We may not let him out the door!"



# of EXCELLENCE

Experienced leadership continues in engineering, maintenance

> It all started in 1989 with a blind job ad in the Houston Chronicle. Bruce Turner applied, not knowing that the employer was Thermal Energy Corporation - a company he had never heard of - and that his new journey would last three decades.

He first walked through TECO's doors to serve as project engineer. Just one week later he was promoted to engineering manager, filling a position previously held by a promoted colleague. His office was just 5 feet by 5 feet, including only a desk, a chair and a bookcase.

retired:

66

Bruce Turner, PE, CPE

Vice President, Engineering TECO tenure: 1989-2019

Bruce's first task was to oversee engineering and construction of the South Main Plant, TECO's satellite plant.

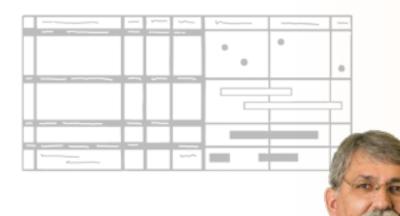
Time sped by as Bruce tackled major project after major project, eventually becoming at one point vice president of operations, maintenance and engineering - all at one time!

Bruce's legacy, though, may be his dedication to quality and reliability. He embraced "Failure is not an option" and committed himself to planning ahead and emphasizing attention to detail. He anticipated what could go wrong and made sure that TECO's plants and distribution systems were accordingly designed and maintained.

After Tropical Storm Allison drenched the Texas Medical Center campus, Bruce headed up the effort to build a floodwall and floodgates around TECO's Central Plant. Later he stepped in to oversee TECO's largest expansion ever at its Central Plant, which survived Hurricane Harvey in large part due to his efforts.

Over the years, Bruce has always tried to set a good example. "If you have a positive work ethic, the people who work for you see that you care, and they're likely to follow suit," says Bruce. "When I would walk around the plant, I'd always take the time to pick up trash, hoping to inspire others. That's how we can constructively influence the future."

My wife and I love to horseback ride, especially in Colorado. And we've got some property and a few cattle just west of Houston, so I'll have plenty to do. But I'm still going to miss the people and camaraderie at TECO. They're something special."



Mike Manoucheri, PE

Vice President, Engineering and Maintenance

Mike Manoucheri knows his wav around district energy plants. Before he came to TECO to head up engineering and maintenance, he played a key role at yet another award-winning combined heat and power system in the state.

As associate director of plant operations at The University of Texas at Austin for six years, Mike led a team of 80 people who operated, maintained and improved the central power plant and chilled-water system serving the university's main campus. He started with the system five years earlier as maintenance manager.

"I was excited to make the move to TECO," says Mike. "Everyone in the district energy industry has heard about this system. It is best-in-class, so it was a great opportunity. I was especially impressed when I learned they x-ray every weld during piping construction. That's a commitment to reliability."

Previously, Mike worked in engineering, maintenance and operations in petrochemical processing and power plants, including at The Dow Chemical Co. It was there that he honed his leadership style.

From plant operators to the highestlevel executives, all employees went through the Supervisory Skills Training Program. "Today I try to lead by example with honesty

I've enjoyed a very warm welcome here – better than anywhere else I've been. Everyone has been really friendly and helpful. Right away, I felt like part of the family."

and integrity and provide people with both coaching and leeway," Mike explains. "I remember one employee at Dow who was challenged in his position. But together we worked through it, and he became a star performer. When he left for a promotion, he called to thank me for my guidance. That makes it worthwhile."

In his new job, Mike oversees not only plant design, project management and expansion, but also environmental, health and safety programs; IT; and security. He worked together with retiring Vice President of Engineering Bruce Turner to ensure a smooth job transition.

"I'm inspired by the attention to detail that Bruce put into designing and engineering plant systems," says Mike, "down to color-coding labels on valve handles to optimize operator efficiency. I promise we'll continue to do things right."

## Maintaining with PRIDE Customers, mission-critical services inspire leadership, respect and trust I have much to be grateful for, but as I head into retirement. I'll admit my focus is on bass fishing. I've fished for 40 years, and now realize how much it means to me. Once my boat hits the water, any warehouse responsibilities. problems that I may think I have just seem to melt away."

1978. The NFL's Houston Oilers selected future Hall of Famer Earl Campbell as their number 1 draft pick. TECO acquired the district energy system on the Texas Medical Center campus. And Charlie Michalak first walked through TECO's doors as a contractor, a foreman for an industrial service firm. He could never have imagined he would spend the rest of his career as part of the TECO family.

Charlie and his team were in charge of installing chillers, boilers, cooling towers and miles of chilled-water and steam piping. Five years later, TECO hired Charlie - already well-known and respected - to serve as its maintenance supervisor, then becoming maintenance manager as he took on additional plant and

What inspired his decades-long career at TECO? "The criticality of the medical center," Charlie answers. "This is not just an energy plant that makes cold water for X cents per ton-hour. It's a mission-critical operation. Lives are at stake. That's always inspiring. Plus, the fact that this is the largest chilledwater system in North America, that alone can make your head swell with pride."

Charlie was always proud of his crew too. He aimed to guide their way, helping them improve their skills and embrace the importance of the task at hand. He was the kind of leader who showed people that he respected them, they were important to him, and he was willing to do whatever it took to get the job done.

"Once you develop a relationship with your guys," says Charlie, "they know that you

trust them and they can trust you. That gives them the confidence to grow on the job. I may have left the building, but I know that these guvs are professionals who will continue to provide reliable service and weather any storm that comes their way."

Charlie Michalak

Maintenance Manager TECO tenure: 1983-2018

retired:

66 Almost 40% of TECO's workforce is in the maintenance department. We make sure everything is in working order – all the time – so it's important. I'm honored to lead this great team."

## Mycah Jewell, PE

While growing up in New England, Mycah Jewell was already a fix-it kind of guy. "As most mechanical engineers, I always liked taking things apart," he explains. In fact, he used his hands-on skills as a carpenter before heading off to engineering school at the University of South Florida. Today Mycah's practical, jack-of-alltrades aptitude and his utility industry experience serve him well as TECO's maintenance manager.

"Even coming out of school, I was interested in utilities." he says. "I thought power generation would be a good fit for me, so I kept my eye on the industry." Mycah ended up on the capital projects crew of power generator Entergy, in nuclear plant engineering for Fortune 100 utility Exelon, and even as an engineering consultant in the Congo.

Mycah joined TECO as senior project engineer in 2016. Tapped to replace Charlie Michalak in 2018, Mycah worked closely with Charlie for several months to ensure a smooth transition to his new role as maintenance manager. "It was a privilege to have him share his voice of experience about the system's operation," he says.

As Mycah takes over the reins, he too is committed to maintaining good

relationships with his crew. "My goal is to set clear expectations, communicate openly, get input and involve employees in decisionmaking," explains Mycah. "When people feel invested in their facility and take ownership of it, they do good work."

Mycah is excited about what the future holds for himself and for TECO. "Admittedly, I grew up rather poor, so to think I'm working for an outstanding company on the campus of the world's largest medical complex is humbling. I want to make sure I do my best to help TECO reliably meet the medical center's needs. That guides everything we do. We continue to finetune our scheduling, our processes and our inter-department communication plus adopt new technologies that could benefit our maintenance program - and our customers."

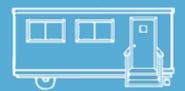
He adds with a smile, "The transition was a success, and we're moving forward. But if I should ever want to contact Charlie, I do know where to find him: hunting for bass on Lake Conroe."



June 1, 1978

On May 31, 1978, Texas Medical
Center Heating and Cooling
Services Cooperative Association
(later known as TECO) bought the
Central Heating and Cooling Plant
and its distribution system from
Houston Natural Gas Company for
approximately \$20 million, which
provided the financing. TECO paid
8% interest on the 20-year note.
At midnight June 1, 1978, TECO
officially took over the facility.





"When TECO first started, they didn't even have an office in the plant. We had to bring in a trailer, the sort that a contractor uses on a job to supervise the work. That was the office for that plant for several years."

Ralph S. Kristoferson TECO President (Chairman 1978-1999





## ) OING it RIGHT

Experience keeps maintenance on schedule

> Johnny Runyan got his first look at TECO's Central Plant even before there was a TECO. In 1970, just a year after the plant started operation under Houston Natural Gas Company, Johnny worked as a contractor on one of its boilers.

> Twelve years later, Johnny came back and was employed by the plant's new owner TECO as a full-time mechanic. The years in between found Johnny serving in the U.S. Army as a missile technician, working on workover rigs in oil fields, working for a boilermaker, and running his own boiler welding shop.

> "I thought working for a boilermaker was about as much fun as one could have for a job, until I came to TECO," says Johnny, TECO's retiring maintenance supervisor. "I was still able to work on boilers here, but I got experience on lots of other equipment too. Plus I had an incredible staff and management's trust, which made running everything easier than it looked on paper."

In the mid-1980s, Johnny was tapped to be maintenance supervisor, scheduling projects and coordinating the equipment, parts and mechanics to get the job done. He is impressed by new technologies that improve performance and extend equipment life and has welcomed many innovative technologies over the years. All the while, Johnny has kept

> projects on pace, even when 700 new pieces of equipment were introduced - and the team had to learn how to maintain and repair every one of them during TECO's major expansion between 2007 and 2011.

"It's hard for people to imagine how different it is now than it was in the early days," says Johnny. "Before centralized controls were introduced, the boilers were operated manually. Sirens went off if something went wrong, and everyone would go running to get the boiler fixed. But we made it work and had a reliable system because we knew what was at stake. In all the years I've worked here, we've never forgotten who we're serving."

You've got to be honest with your crew. They need to know when they're doing a good job and when they're not. That's pretty much the bottom line. If we get complacent, quality suffers, and in our position we cannot afford that."

## :inspired

his philosophy has not. "We are here to do a job to the best of our ability," he says. "I tell the guys that when they're done and walk away from that piece of equipment, it shouldn't have to be fixed for another five years. That's possible if you do it right. So if they need another day or two to make that happen, that's what I want them to do. It pays off in the long run."

TECO handles nearly 90% of its maintenance in-house, with a computerized plan set up to accommodate peak cooling and heating season. Most chiller work is performed in the winter, with boiler maintenance handled in the summer. All work is performed with safety in mind.

"When I interviewed some of our most recent hires, I emphasized safety," Mike says. "TECO is safe. We've got a good safety record, and we've got good people that work safe. I guess you could call that a benefit that's not in the benefits package."

If someone were to ask TECO's new Maintenance Supervisor Mike Handorf when a piece of plant equipment was last maintained or repaired, he would likely be able to tell them – without checking his records. He just knows. Since starting with the company as a trainee in 1983, Mike has handled more maintenance and repair projects than he can count – and he's always ready for more.

Mike Handorf

Maintenance Supervisor

"When you come right down to it, our job is to keep TECO healthy," says Mike. "We perform both predictive and preventive maintenance and make repairs. Although some software tools help us out, it's our crew's experience that makes the difference. They know our equipment inside and out. If they have to crawl into a dismantled chiller, they do it. If they have to change out a part in the middle of the night, it gets done. That's what we're here for."

Mike's new role puts him in charge of project scheduling and coordination for a crew of nearly 20, a job long held by predecessor Johnny Runyan. Although Mike's responsibilities have changed,





a mechanical engineer at TECO. "I valued the ISS experience," says Jess, "but my TECO work is so much more tangible and satisfying. I can actually see what we've designed in real-time operation."

Jess became a TECO employee after working at Jacobs Engineering, and previously Carter & Burgess. He was the consulting project manager and design lead on TECO's Master Plan Implementation Project, the largest expansion in TECO's history.

Before joining Jacobs, Jess performed energy audits and conservation projects for Sempra Energy Solutions at military bases, educational facilities and hospitals. His first job after earning his mechanical engineering degree was with United Space Alliance.

Most recently, though, Jess worked in tandem with TECO's Steve Lehr, preparing to take on Steve's duties when he retired. "His work ethic and broad system knowledge were inspiring and educational," he says. "I learned how to work closely with contractors and always be asking, 'Why do we do things the way we do?' That can lead to excellent discussions and a finetuning of our approach."

Jess now oversees system design and piping construction projects. "We just wrapped up some critical jobs, including three of our largest-ever piping network extensions," he explains. "Our contractor Tellepsen did some

major streets, all without issue. It was an amazing feat. I'm pretty proud of that. Those projects are now done and all surfaces, restored. You'd never even know we were there."

Jess strives to lead his team with an easy-going manner and a relationshipbased approach that pulls everyone together. "We all play a role in achieving our goals," he says, "and I try to acknowledge that by giving credit where credit is due. We all have the ability to effect change here. There aren't many places like it. It's quite a land of opportunity."

## Masterof PURCHASING

High procurement standards translate to reliability



TECO has long hired military veterans. Vets have a service work ethic, and many are the boiler operators, engineers and mechanics TECO needs to keep its plants running. But recently retired Jim Daniel - a U.S. Air Force and Titan Il missile program veteran - found his way to TECO not because he could run a boiler, but because he was a master of logistics.

While serving in the Air Force, Jim had an affinity for managing communications and logistics, skills that led him to procurement roles in the oil and IT industries. At TECO, Jim led the department that purchased parts and equipment - valves, fittings, pipe, water treatment chemicals and other critical supplies.

In a mission-critical organization like TECO, ensuring that parts and supplies are always available is essential for system reliability. Global supply chains and just-in-time manufacturing have added complexity. "More and more companies are not stocking everything," says Jim. "So the challenge is identifying critical parts that could put you out of commission or severely hamper your operations, then getting those parts ordered and stocked in inventory."

Making that happen requires clear communication, internally and externally. "Although most of our

Jim Daniel

**Procurement Manager** TECO tenure: 2002-2018

Leaving the people that I worked with leaves a gigantic hole in my life. You become so used to interacting with them, that it's hard when they're gone. I've often called TECO an oasis. I was very fortunate to find it myself."

communication was by email, I still liked face-toface talks," said Jim. "That way you could sit down and thoroughly discuss a project's needs, the pros, the cons, and agree on an action plan."

Over his many years with the company, Jim found inspiration both in the organization's mission and his colleagues. "TECO's employees - and key business partners, for that matter - understand TECO's mission. They are the perfect complement for the vital service TECO provides. When the folks fighting illness and disease on the Texas Medical Center campus look at TECO, they can know that the people who work here never give up."

## FINANCE AND ADMINISTRATION

- Exceeded budget expectations for FY2018\* and presented FY2019\* budget that was approved by Board of Directors.
- Completed FY2018 financial audit. There were no notable comments regarding FY2018 financial results, accounting methods, process or internal controls.
- Maintained TECO's financial closing on third business day of the month.
- Met on a regular basis with Board members outside of regularly scheduled meetings and met with senior executives for many customer institutions.
- Transitioned six key positions representing more than 235 years of service with TECO.
- Prepared accurate forward-year rate forecasts for institutions that need them for early-in-the-year budgeting.

- Conducted employee survey for 2018.
- Produced and distributed TECO's 2017 Annual Report, "Always Prepared."
- Issued \$9.9 million in customer rebates for FY2018.

Conducted 2018 customer satisfaction survey, with 100% of respondents replying that TECO's chilledwater and/or steam service met their expectations very well (highest rating) over the past year.

## **OPERATION**

- Maintained uninterrupted system operation during Hurricane Harvey and the resulting flooding in Houston.
- Generated 100% of own power during peak power demand periods recorded by Electricity Reliability Council of Texas (ERCOT), so TECO had zero power demand during these periods. TECO's CHP system eliminated the risk that chilled-water and steam customers could be negatively affected by power grid failure.
- Successfully followed Energy Policy initiated by Board of Directors in 2006, which helps TECO lock in fuel purchases at the lowestpossible cost.
- Continued Operator Training and Certification Program as scheduled. Three operators received or upgraded their City of Houston stationary engineer license in 2018.
- Completed FY2018 with only one recordable accident and with no lost time accidents. At fiscal year-end, TECO had gone more than 1,300 days without a lost time accident.
- Achieved Workers Compensation
   Experience Modifier of 0.88, which continues to be below the industry average.

- Successfully completed, on schedule and budget, capital projects to enhance performance, efficiency and reliability.
- Continued Major Equipment Replacement Program (MERP) and the insurance reserve fund. MERP ensures funding will be available for future equipment replacement as needed assuming normal equipment life cycles. By regularly allocating money to insurance reserve fund, TECO can raise deductibles and reduce insurance premiums.
- Continued to operate and maintain The University of Texas Health Science Center's Research Park Energy Plant, South Campus. TECO remotely monitors plant operations 24 hours a day, and operators visit the plant daily, bringing UTHealth significant economic savings and improved operational benefits.
- Continued to serve as point of contact for monitoring Metro Stray Current issues and their effect on institutions in Texas Medical Center.

Provided 100% chilled-water and steam reliability to customers.

## **CUSTOMER SERVICE**

- Completed distribution projects on schedule and budget to serve Houston Methodist Hospital's Walter Tower, Memorial Hermann Hospital's Pavilion II, and Houston Community College Tower.
- Continued construction on pipeline project on schedule and budget to serve Harris Health's Ben Taub Hospital.

\* Fiscal year September 1 - August 31

## MEASURING UP FY2018 Metrics

	Chilled Water	Steam
CUSTOMERS		
Number of customers	16	16
Number of buildings served	48	36
Square feet served	21.7 million	16.1 million
Energy sales	319,298,000 ton-hr	922,695 Mlb
ENERGY SOURCE	S	
Paul G. Bell, Jr. Energy Pla	ant – Central Plant	
Number of boilers, chillers/fu		7 boilers natural gas & diesel
Thermal storage tank	8.8 million-gallon chilled-water storage tank	n/a
South Main Plant		
Number of boilers, chiller/fue	ls13 chillers/electricity	2 boilers natural gas & diesel

OPERATIONS/DISTRIBUTION							
Capacity	120,170 tons	980,000 lb/hr					
	(including thermal storage)	(with heat-recovery steam generator & duct firing)					
Supply temperature	40° - 43° F	450° F					
Supply pressure	55-75 psi	400 psi plant,					
		250 psi distribution					
Return temperature	52 <sup>0</sup> -55 <sup>0</sup> F	150° F					
Water volume in system	12.4 million gallons	n/a					
Steam pressure	n/a	400 psi					
		Welded steel, Schedule 40 with insulation					
Piping diameter	6 to 60 inches	2 to 16 inches					
Piping distribution trench leng		7.7 miles					

**Chilled Water** 



## REPORTIN

FY2018 Financial and Operating Statistics

TECO completed fiscal year 2018 with operating revenues 3.9% over budget and operating expenses 11.4% under budget. A majority of the expense variance was realized because (1) interest expense was 25.8% below budget due to the 2017 bond issue to refinance the 2008 and 2009A Bonds at significantly lower rates, (2) fuel and water costs came in 13.8% below budget due to operating efficiencies and (3) personnel costs finished 12.4% below budget. These and other favorable expense variances along with additional operating revenues allowed for a customer rebate in excess of \$9.99 million (11.9% of budgeted operating revenues) in August 2018.

TECO's income from operations in fiscal year 2018 was approximately \$5.0 million; ultimately, total revenues were less than expenses by approximately \$7.9 million. The \$12.9 million difference was the net result of the required reporting of an unrealized mark-to-market gain on an interest rate swap associated with the company's Series 2012 Bonds, unrealized losses on investments, and a \$13.1 million non-cash loss on early extinguishment of debt associated with the 2017 bond refinancing.

The \$13.1 million loss comprises the write-off of approximately \$3.9 million unamortized bond issue costs for the bonds being refinanced and approximately \$9.2 million in losses associated with doing an advance refunding. The 2017 bond refinancing resulted in a net present value \$38.6 million savings over the existing bonds.

TECO achieved its below-budget fuel cost without deviating from its energy policy, which provides fuel price stability so that rapid increases in fuel costs do not affect TECO's rates during a budget year.

The company met all of its planned cash, internally set financial, and debt covenant requirements for fiscal year 2018.



## **Rates and Units**

Fiscal year September 1 - August 31	FY2018	FY2017
CHILLED WATER		
Rate (\$/ton-hr)*	\$ 0.1863 .	\$ 0.2095
Rate (\$/MMBtu) *	\$ 15.52	\$ 17.45
Peak Demand (tons)		
Average Demand (tons)	38,070	37,694
Load Factor	51% .	55%
Peak (sq ft/ton)		
Production (sq ft/ton-hr)	0.065	0.063
Production (ton-hr)33	3,496,080	330,201,265
Cooling Degree-Days (3,510 normal)	3,590	3,688
Fuel Consumption (natural gas and electricity) MWh	276,888	253,074
STEAM		
Rate (\$/Mlb)*	\$15.04	\$18.73
Rate (\$/MMBtu)*	\$ 13.64	\$16.98
Peak Demand (lb/hr)	378,854 .	254,720
Average Demand (lb/hr)	130,185 .	111,933
Load Factor	34% .	44%
Peak (sq ft/lb)	40	60
Production (sq ft/Mlb)	13 .	16

Production (Mlb) .......980,533

Revenue and Expenses				
FY2018	FY2017			
\$ 67,580,397	\$66,296,696			
\$ 15,764,479	\$ 14,602,923			
\$ 3,638,677				
\$ 86,983,553	\$84,562,621			
\$ 5,966,056	\$ 7,789,395			
\$ 6,875,985	\$ 7,211,549			
\$ 104,951	\$ 96,032			
\$ 58,993,160	\$ 60,488,662			
\$ 71,940,152	\$75,585,638			
\$ (9,993,524)	\$ -			
\$ 5,049,877	\$ 8,976,983			
\$(12,916,238)	\$ 496,628			
nses <b>\$ -</b>	\$1,586,182			
\$	\$ 2,566,572			
	\$67,580,397			

(Deficiency)/Excess of Revenues Over Expenses ..\$(7,866,361) ......\$5,320,857

<sup>\*</sup> Rates after rebate

# INSPIRED TO LEAD THE TECO TEAM

Haley Ackman
Marsha Ackman
Craig Acree
Rosalie Arellano
Priscilla Avila
Henry Barrios
Jordan Baxter
Rohn Benfield
Chris Beroo
Jason Berrio
Clarissa Brewster
Julian Brewster
Fabian Charry

Corey Contreras Milton Cowan Jim Daniel, Jr. Charles Darden Ruth Davis Steve Del Toro Shawn Dennis Ryan Doucet Jackson Fay Kerry Fischer Kyle Fridley Manuel Gamez Jose Garcia



total, including the foreman. So it was a very small group of employees

running this place at first." - Ram Goonie, CEM, Energy Director, TECO

Joey Garcia
Kevin Giblin
Ross Goedeke
Phillip Gonzales
Vincent Gonzales
Ram Goonie
Todd Gryseels
Manny Guerra
Travis Hampton
Mike Handorf
Jess Harper
Troy Hollin
Steve Hyde

Mycah Jewell
Juan Jimenez
Brandon Johnson
Barbara Johnston
Brady Jones
Austin Kelly
Zhanna Kogan
Jacob Kruezer
Nolan Lambert
Roger Lambert
Steve Lehr
Antonio Lopez
Mike Manoucheri

Jared Marish
Ronald Martens
Eddie Martinez
Joel McCormick
Thomas McDonald
Lamont McInnis
John McNeil
Charlie Michalak
Dan Mitten
Gordon Morrow
Frederick Musil
Philip Muzar, Jr.
Stephen Nagy

Larry Null
Fidel Orizaba
Walter Pascua
Thomas Penzi, III
Shelly Pesak
Kim Pettis
Kelly Powell
Sean Price
Faustino Quiroz
Tim Reardon, IV
Rey Regresado
Carl Richardson
Jenice Ricks

Melissa Ripple
Jose Rodriguez
Juan Rodriguez
Brad Rogers
Johnny Runyan
Jake Ruttle
Tong Sahnon
Isauro Salinas
Jared Schneider
Donald Seay
Ernestine Shepard
Jeffrey Snover
Phyllis Sousley

Don Stowe
Steve Swinson
Ramon Tapia
Mike Thamm
Karen Thomas
Bruce Turner
Justin Underwood
Salomon Vega
Scotty Walker
Linsey Whalen
Shane White
Shane Williams



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**2018 ANNUAL REPORT** 

# INSPIRED TOLEAD

