

POWERING RELIABILITY

Shaping the grid that tomorrow requires

MISO

misoenergy.org

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A Message from John Bear, President and CEO



For 25 years, MISO has carried a single, essential responsibility: helping ensure that the electricity millions of people rely on is delivered reliably and efficiently. That responsibility has guided every challenge faced and every decision made along the way, and it has been carried out by the people who make this organization what it is.

This history tells how we got here, not through systems or structures alone, but through the individuals and partners who built them. Every chapter reflects the work of employees in our control rooms and offices, member utilities across our footprint, and stakeholders who leaned in, collaborated, debated, and ultimately chose to build something stronger together. From the earliest conversations about forming an independent system operator, one principle has remained constant: reliability is a commitment renewed every day by the people who uphold it.

The stories in these pages highlight the collaboration, independence, transparency, and shared purpose that have defined MISO from the beginning. They show how operators managed through storms and tight conditions, how planners strengthened the backbone of a growing grid, and how members and regulators helped ensure MISO had the resources necessary to keep power flowing reliably. They reveal a quarter century shaped by people who brought skill, judgment, resilience, and deep responsibility to the work.

As we look ahead to the next 25 years, the challenges will evolve, and the grid will continue to change. But the foundation of our future is the same as our past: the people who make reliability possible. Our employees, our members, our states, and our stakeholders will continue to plan, coordinate, and solve problems side by side. The work ahead will require adaptability, foresight, and shared resolve, and we will meet it together, just as we always have.

We hope this collection offers insight into the journey so far, honors the people who made it possible, and illuminates the work still ahead as we continue shaping the grid that tomorrow requires.

John R. Bear
President and Chief Executive Officer

Era I — The Road to RTO (1996–2001)

From Vision to Reality

The first era of MISO's history began with a simple but transformative idea: that reliability, transparency, and open access required a new kind of regional operator. In 1996, a group of utilities recognized that the grid was changing and that collaboration, not competition, would be essential for meeting future needs. What followed was a remarkable period of voluntary alignment, regulatory advancement, and organizational growth. Over these six years, MISO evolved from a forward-looking concept into an independent, not-for-profit Regional Transmission Organization with a professional board, expanding membership, and a purpose-built control center designed for regional reliability.

This progress was shaped by challenge as much as momentum. As the footprint expanded, so did the complexity of integrating transmission systems, aligning diverse utility interests, and navigating high-stakes regulatory decisions. Some years brought turbulence, including member withdrawals, regional seams debates, and competitive pressures across the industry. Yet each obstacle clarified MISO's mission and reinforced its commitment to neutrality, consistency, and dependable service. Through rigorous trials, NERC approvals, and deepening coordination across utilities and regions, the organization steadily proved it could lead at scale.

The era reached its defining moment on December 15, 2001, when MISO began providing security coordination and soon after was designated the nation's first Regional Transmission Organization. In just a few years, a pioneering vision had become an operational cornerstone of the Midwest's power system. Era I tells the story of how that foundation was built through persistence, partnership, and a shared belief that regional coordination was essential to the grid's future.

1996 — The Moment a New Model Emerged

Independence, transparency, and a bold first step

A new era begins when a simple idea gathers enough conviction to change an entire region.

In 1996, a simple but bold idea ignited what would become one of the most significant transformations in the Midwest's electric industry: create an independent system operator to strengthen reliability and improve access to the grid. On February 12 of that year, six transmission-owning utilities announced their intent to voluntarily form what would later become the Midwest Independent System Operator, a pioneering move in an industry still dominated by vertically integrated utilities.

At the time, most utilities generated, transmitted, and delivered electricity within tightly defined territories. This model had worked when power flowed short distances and transactions were infrequent. But the system was becoming more dynamic. Electricity was moving farther across state lines, competitive pressures were growing, and the underlying transmission network was not designed for the new reality. Reliability and equal access needed a modern framework, and 1996 provided the catalyst.

That same year, the Federal Energy Regulatory Commission issued Order 888, opening transmission access to all suppliers on equal terms. It was a watershed moment in energy policy. Order 888 required open, nondiscriminatory access to the grid, while its companion, Order 889, established the Open Access Same-Time Information System (OASIS), ensuring all market participants could view the same transmission information simultaneously. OASIS remains in use today, a testament to the durability of the transparency it introduced.

As MISO CEO Jim Torgerson reflected years later, “When the Midwest ISO was formed in 1996, the Independent System Operator model was the industry’s model of choice, driven by the principles laid out by FERC in Order 888.” Those principles, independence, transparency, equal access, and enhanced reliability, formed the backbone of the emerging ISO.

Turning the 1996 vision into a functioning organization would take several more years of filings, board formation, financing, and system build-out. But the foundation was set. The spark had been lit. The work of building a new era of reliability had begun.

WHY IT MATTERED

1996 marked the moment the Midwest acknowledged that the grid needed a different kind of operator, one built for independence, regional reliability, and shared access. Decisions made that year established the groundwork for MISO’s formation and set direction for shaping the grid that tomorrow requires.

1998 — A Regional Vision Takes Shape

Foundation, participation, and shared purpose

An idea becomes real when people choose to build it together.

In early 1998, that choice took center stage. Nearly two years after six utilities first proposed forming an independent system operator, nine transmission-owning companies submitted a formal filing to the Federal Energy Regulatory Commission asking to be recognized as an independent system operator. It was a pivotal moment, the shift from concept to commitment. The industry was changing rapidly, and the region needed a structure that could strengthen reliability across a larger footprint while ensuring that every participant, big or small, stood on equal ground.

The idea of voluntary participation was more than a governance detail; it was a declaration of identity. At a time when utilities were still adjusting to competition and new regulatory frameworks, choosing to join a shared regional operator signaled confidence in a future defined by collaboration rather than control. The filing laid out a simple but transformative proposition: build a single regional transmission system operated by an independent, not-for-profit entity whose only priority was reliable, fair access for all.

Those early decisions shaped both the scale and character of the organization. The filing unified utilities across multiple states into a single, coordinated footprint, one large enough to manage growing power flows and increasing operational complexity. Instead of relying on fragmented systems and bilateral arrangements, the region moved toward a model that emphasized shared responsibility and shared benefits. The Midwest ISO would not be owned by any single company. It would be governed by an independent board and supported by a diverse advisory structure, giving stakeholders a collective voice.

Momentum grew quickly. The voluntary nature of the effort encouraged broad participation, and many companies joined the development phase even if they were not yet ready to be full members. The message was clear: reliability

1998 MILESTONES

- ISO filing submitted to FERC
- Independent, not-for-profit, structure formed
- FERC grants conditional ISO approval
- First independent Board elected
- Voluntary participation anchors early governance

improves when organizations come together on their own terms, bringing diverse resources, geographies, and operational strengths into a unified system. In September, FERC granted conditional approval for the creation of the Midwest Independent System Operator, MISO. The approval validated both the model and the method. By December, MISO members had selected the first independent Board of Directors, a tangible sign that the region's new ISO was becoming real.

This period marked a transition from aspiration to architecture. The Midwest ISO was incorporated as an independent, not-for-profit entity that would operate transparently, remain neutral among market participants, and serve as a trusted operator for a growing footprint. The foundation for everything that would follow, from transmission planning to market design to regional reliability coordination, began with the principle that participation must be voluntary, trust must be earned, and reliability must remain the organizing purpose.

Looking back, the 1998 FERC filing represented more than a legal milestone. It was a cultural one. It showed that the region believed independence, transparency, and collaboration were not just regulatory expectations, they were essential elements of a modern power system. And it set the stage for an organization capable of navigating uncertainty, integrating diverse members, and standing up a regional platform that could adapt to each new era of the grid.

WHY IT MATTERED

Voluntary participation and independent governance became defining principles in 1998, creating trust, structure, and a unified regional foundation for reliable transmission coordination. These choices prepared MISO for broader responsibilities, shaping the grid that tomorrow requires.

1999 — Establishing MISO's New Home

Direction, definition, and early formation

A pivotal choice shapes not just location but identity.

In 1999, MISO reached one of those defining moments. After years of conceptual work, regulatory filings, and early governance decisions, the young organization needed more than plans, it needed a home. The Board's choice to locate MISO's headquarters and permanent control center in Carmel, Indiana marked a major step in turning a regional idea into an operational reality. It was a signal to members, regulators, and communities that the Midwest was committed to building a modern, resilient grid operator for the long haul.



The decision followed months of internal work that strengthened the organization's foundation. By mid-1999, the Board had selected the Indianapolis metropolitan area for both the administrative headquarters and the control center. At the same time, the organization was assembling its first permanent leadership team. With a new President and CEO in place, along with executives in operations, finance, information technology, and corporate services, MISO began building the institutional backbone needed to coordinate a growing regional grid.

Carmel offered something more than office space. It provided the opportunity to design a purpose-built, hardened facility capable of supporting around-the-clock grid operations. The planned building would house advanced systems for planning, engineering, and operations, a physical embodiment of the organization's commitment to reliability. In a period when the region was still navigating competitive pressures and shifts in transmission ownership, having an independent, technically sophisticated control center sent a clear message: MISO intended to lead with readiness and neutrality.

State leaders recognized the significance as well. The move brought high-skilled jobs and investment to Indiana, positioning the state as a key hub for the region's electricity flows. For MISO, the location offered access to engineering talent and a stable community environment that would help attract and retain the experts needed to run a complex, multi-state power system.

Behind the scenes, MISO's footprint continued to grow as more utilities engaged with the organization's open architecture and early governance model. Investor-owned utilities, municipal systems, and cooperatives were joining or participating in development efforts, drawn by the promise of a regional approach that strengthened reliability and reduced operational seams. As MISO expanded, the need for a central, resilient hub became even more essential.



1999 MILESTONES

- Carmel, Indiana chosen for HQ
- First President and CEO hired
- Business executive teams formed
- Planning underway for operations facility

Choosing Carmel also reflected the broader values MISO was cultivating. Independence, transparency, and reliability weren't theoretical commitments, they required infrastructure, people, and systems designed to support a regional grid that could withstand uncertainty. The headquarters decision showed that the organization was willing to invest in the physical and operational capabilities needed to serve a diverse set of members and communities. It was a commitment to stability during a period of industry transformation.





In hindsight, 1999 stands out as a year when MISO turned decisively from planning to building. The new headquarters wasn't just a location; it was a promise of capability, continuity, and preparedness. It demonstrated that the organization was ready to move beyond filings and governance structures toward the real work of coordinating reliability across a vast, evolving footprint.

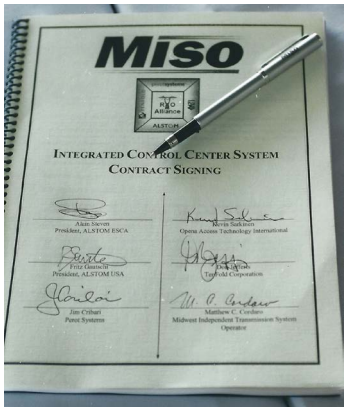
WHY IT MATTERED

Selecting Carmel anchored MISO operationally and culturally, providing a dedicated home for the systems and expertise needed to manage regional reliability. This established the institutional base for future growth, shaping the grid that tomorrow requires.

2000 — Securing the Path to Independence

Commitment, structure, and financial grounding

Independence becomes real only when the foundations to support it are built.



By 2000, MISO had moved beyond early governance decisions and facility planning into the harder work of proving that an independent regional operator could stand on its own. That year became a turning point. To deliver on its mission, the organization needed not just systems and people, but financial credibility, the means to construct its control center, integrate critical technologies, and operate without depending on the balance sheets of its members.

The financial journey began the year before, when MISO secured a major credit agreement that gave the organization its first working capital. But 2000 was when independence became tangible. MISO issued long-term debt to refinance earlier borrowings and fund the Integrated Control Center Systems, the technological heart of future operations. The investment supported a hardened, purpose-built facility designed to handle real-time coordination, planning, engineering, and administrative functions under one roof. It represented the transition from concept to capability.

Credit ratings reinforced the progress. National agencies reviewed the offering and issued strong evaluations, a signal that MISO's governance model, structure, and financial plan were sound. For a young organization preparing to operate a regional transmission system, this external validation mattered. It showed that independence wasn't simply a regulatory requirement; it was an operational foundation built through discipline, transparency, and clear purpose.

Behind these developments was a footprint that was expanding rapidly. As more utilities engaged with MISO, the region's transmission miles and generation capacity grew, increasing both the opportunity and the responsibility facing the new operator. With a larger system came greater need for reliable infrastructure, secure operations, and financial stability. Borrowing independently, rather than relying on member support, demonstrated to stakeholders that MISO intended to lead with neutrality and readiness.

These investments built the operational backbone still visible today. Financing enabled the construction of a hardened control center equipped with advanced technologies; it strengthened coordination across a growing regional grid; and it gave MISO the resources to meet its

2000 MILESTONES

- Long-term debt issued
- Control Center Systems funded
- Credit ratings affirm financial strength
- Independent financing reinforces neutrality
- Investments strengthen reliability foundation

commitments as the organization prepared for market evolution and rising reliability expectations. Each step reinforced the idea that reliability requires both independence and the infrastructure to support it.

Looking back, 2000 was the year MISO proved it could fund its own future. It set a standard for independence that would guide the organization through market launches, regional expansions, and technological transformation. The choices made that year ensured that MISO could enter each new era with a stable foundation and the ability to invest in what the region needed most: dependable, reliable, impartial operations.

WHY IT MATTERED

Independent financing in 2000 transformed MISO's aspirations into operational capability, enabling investment in critical infrastructure and proving the organization could support regional reliability on its own. This financial foundation set direction for future responsibilities, shaping the grid that tomorrow requires.

2001 — Weathering Early Operational Tests

Pressure, learning, and organizational character

Every organization meets a moment that reveals its true nature.

For MISO, that moment arrived in early 2001. After years of voluntary participation, expanding membership, and the steady build-out of governance and infrastructure, the organization suddenly found itself at the center of uncertainty. Several transmission owners signaled intentions to leave. A competing entity, the Alliance RTO, sought dominance in the region. And all the while, the deadline for FERC's new RTO requirements approached. It was the kind of moment that could fracture a young organization or clarify its purpose. For MISO, it did both.

The challenge began when key members filed to withdraw from MISO or signaled their intent to do so. Their departure threatened to split the regional footprint and undermine years of collaborative work. Even more concerning, other utilities warned that if these companies exited, they too would have to withdraw to avoid being physically disconnected from the remaining system. The stakes were not abstract, they were operational. Without a cohesive regional structure, reliability across large portions of the Midwest could be compromised.

At the same time, the Alliance RTO was pressing its own case at FERC, positioning itself as the preferred regional platform. The debate reached a critical point as parties negotiated late into the night to settle rate structures, membership issues, and regional coordination responsibilities. The industry was shifting, and both organizations were vying to define what reliability and regional coordination would look like in the decades to come.

The breakthrough came on May 9, 2001. FERC approved a settlement that allowed certain MISO members to withdraw while strengthening regional reliability by creating a broader, seamless rate area spanning from the Dakotas to the Mid-Atlantic. The agreement also established cooperation protocols for transmission planning, congestion management, market monitoring, and security coordination, the connective tissue that would prevent seams, reduce

2001 MILESTONES

- Member withdrawals threaten cohesion
- Alliance RTO rivalry raised stakes
- FERC settlement permits departures
- Seamless rate area was established
- Coordinated operations protocols created

duplication, and maintain regional stability. The settlement balanced autonomy and interdependence, signaling the Midwest's commitment to practical, scalable reliability.

With the membership crisis stabilized, MISO turned its attention to readiness. The organization had to demonstrate not only governance and financial capability, but operational competence. In July 2001, NERC approved MISO's regional security coordination plan, marking the first time the organization endorsed a plan spanning multiple reliability councils. Two weeks later, MISO launched Market Trials, a rigorous, end-to-end test of tagging, scheduling, outage coordination, system response, settlements, and 24/7 operations. These trials were proof that MISO's systems were ready for Day One.

By the end of the year, uncertainty had given way to clarity. At 12:01 a.m. on December 15, MISO began providing security coordination services, initiating procedures for planning, market monitoring, and interconnection. Days later, on December 20, FERC formally approved MISO as the nation's first Regional Transmission Organization. What began as a crisis became the crucible that shaped MISO's identity.

WHY IT MATTERED

Navigating member withdrawals and regional seams in 2001 strengthened MISO's cohesion and clarified its operational readiness. These tests unified the organization and reinforced its reliability posture, shaping the grid that tomorrow requires.

2001 — Connecting Systems Across the Midwest

Links, alignment, and regional reach

Regional boundaries fall away when systems learn to operate together.

In 2001, as MISO was stabilizing its membership and preparing for RTO designation, another crucial effort was underway: integrating and coordinating operations across neighboring regions. The Midwest grid was a patchwork of reliability councils, independent transmission companies, and emerging business models. To keep power flowing reliably across these seams, MISO needed to build bridges, organizational, operational, and technological, that could support a unified regional system.



The effort began the year before, when MISO assumed management responsibility for functions previously coordinated by the Mid-America Interconnected Network (MAIN). Although plans for deeper integration ended in 2001, the experience demonstrated the value of regional coordination. MISO soon expanded that reach through the Mid-Continent Area Power Pool (MAPP), acquiring the MAPP Control Area Corporation (MAPPCOR) and bringing the MAPP Control Center, its personnel, and security coordination assets under MISO management. A concurrent agreement with Manitoba Hydro extended coordination across the Canadian border. Together, these efforts consolidated expertise, reduced operational seams, and established the multi-region reliability framework that supported MISO's launch of regional operations in December 2001.

At the same time, independent transmission companies were emerging as a new model in the electric industry. Their success depended on efficient, neutral regional coordination, and MISO offered exactly that. In August, International Transmission Company (ITC) chose MISO for RTO services, marking an important validation of the organization's independent structure and operational readiness. Just one month later, TRANSLink, a hybrid transmission company with both FERC-jurisdictional and non-jurisdictional



members, filed for MISO to provide long-term planning, market monitoring, security coordination, and dispute resolution. TRANSLink would handle its own tariff administration and settlements, while MISO provided the services that required regional scale and neutrality.

2001 MILESTONES

- MAIN operations transition to MISO
- MAPP personnel & assets move to MISO
- ITC selects MISO for RTO services
- TRANSLink joins MISO
- Seams reduced, reliability strengthened

These affiliations reflected a growing recognition that collaboration improves reliability. Whether through shared planning, coordinated operations, or transparent market oversight, MISO offered a way for diverse business models to connect to a common reliability platform. Each new partnership reduced seams, simplified operations, and strengthened the region's ability to prepare for real-time events.

By bridging MAIN, MAPP, ITC, and TRANSLink, MISO demonstrated that the system operator's role extended beyond grid control rooms and software systems. It required diplomacy, adaptability, and a commitment to the idea that the grid works best when it works as one. This was the year when MISO shifted from being a developing organization to a regional convener, a place where utilities, transmission companies, and reliability councils found common ground.

WHY IT MATTERED

Coordinating MAIN, MAPP, and emerging transmission companies in 2001 expanded regional reliability and reduced operational seams. These integrations created a more unified and resilient footprint, shaping the grid that tomorrow requires.

2001 — Achieving Historic RTO Approval

Recognition, transformation, and industry impact

Some milestones reshape not just an organization's future but an entire industry.

For MISO, the final months of 2001 delivered both. After navigating membership challenges, expanding regional integrations, and building operational readiness, the organization faced its ultimate test: proving it was prepared to operate as a fully functional Regional Transmission Organization. The path to that moment ran through systems validation, operational drills, and regulatory review, each one a step toward a historic designation.

The year began with uncertainty, but by mid-year, the pieces were falling into place. In July 2001, NERC's Operating Committee approved MISO's regional security coordination plan. This was more than a procedural milestone, it was the first time NERC endorsed a plan that spanned multiple reliability councils. It signaled that MISO had the tools, processes, and governance needed to coordinate reliability across a vast geographic footprint.

With that approval in hand, MISO began market trials on August 1. These intensive tests evaluated every aspect of the organization's operational readiness: tagging and scheduling, flow-gate verification, outage coordination, maintenance planning, security response, and settlements. The Integrated Control Center Systems had to function seamlessly, coordinating information across multiple regions and supporting 24/7 operations. Market trials validated that the systems, processes, and people were ready for real-time coordination.

2001 MILESTONES

- NERC approval strengthens security coordination
- Market trials validate readiness
- 24/7 coordination services launched
- Midwest ISO designated nation's first RTO

By December, the moment had arrived. At 12:01 a.m. on December 15, MISO activated its security coordination services. With this step, the organization began providing operations planning, generation interconnection procedures, long-term regional planning, and market monitoring across its footprint. Five days later, on December 20, FERC formally designated MISO as the nation's first Regional Transmission Organization, the culmination of years of vision, collaboration, and perseverance.

The achievement marked the closing chapter of MISO's pioneering years. What began in 1996 as a bold idea to strengthen reliability through independence had become a fully operational regional operator setting a national precedent. MISO had proven that diverse members could work together under a neutral structure, that advanced systems could coordinate a multi-state grid, and that regional collaboration could support both reliability and market evolution.

WHY IT MATTERED

Becoming the nation's first RTO validated MISO's model of independence and reliability-driven coordination. This milestone established the framework for modern regional operations, shaping the grid that tomorrow requires.

Era II — Markets & Momentum (2002–2005)

Launching Markets and Strengthening Regional Coordination

The years following MISO's designation as the nation's first Regional Transmission Organization marked a shift from formation to forward motion. With governance established and systems validated, the organization turned toward building the market structures and operational capabilities that would define a modern regional grid. This was the era when MISO moved from proving it could operate the system to demonstrating it could enhance it, transforming foundational concepts into functioning regional services.

Progress built on hard-won lessons from the Road to RTO era. Membership stability, regional coordination, and operational readiness provided momentum for more ambitious development. As the footprint continued to grow, so did the demands on planning, operations, and market design. These pressures reinforced the need for transparency, efficiency, and processes that could support an increasingly interconnected system spanning multiple states and utilities.

Collaboration became a defining feature. Utilities, regulators, and stakeholders worked through the details of market rules, planning expectations, and operational practices that would strengthen reliability while creating a level playing field across the region. The organization that once focused on establishing its identity now concentrated on shaping the tools, protocols, and shared structures necessary for sustained regional coordination. These conversations laid the groundwork for dispatch improvements, long-range planning, and the operational consistency required for future integration efforts.

By the end of 2005, MISO had moved decisively into a period of execution and expansion. Markets were launched, coordination deepened, and the organization's role as a regional operator matured significantly. Era II set the stage for the integration, transformation, and innovation that would follow, demonstrating how shared purpose and aligned market design could support reliability across a changing grid.

2002 — Launching a New Operational Era

Momentum, readiness, and structural shift

Some milestones don't just mark progress, they redefine it.

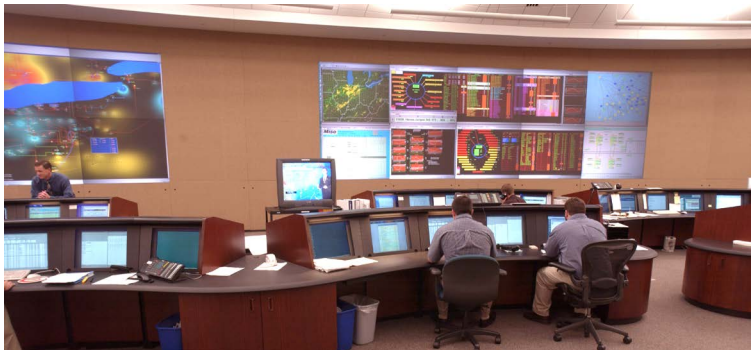
2002 marked the year MISO moved from building its foundation to operating as a fully functional commercial entity. With the launch of regional transmission service, efforts to eliminate rate barriers, and major steps toward broader market integration, the year marked a turning point in how electricity moved across the Midwest and beyond. It was the moment when MISO began reshaping daily operations across its footprint, not just planning for them.



The centerpiece of 2002 came on February 1, when MISO officially began selling regional transmission service under a single, non-discriminatory tariff. For customers, this meant something simple but transformative: instead of paying multiple utilities along a delivery path, they could schedule service

through one process, on one Open Access Same-Time Information System (OASIS) platform, with one bill. The move reduced friction, simplified transactions, and laid the groundwork for eliminating "pancaked" transmission rates, a long-standing barrier to efficient power flows across the region.

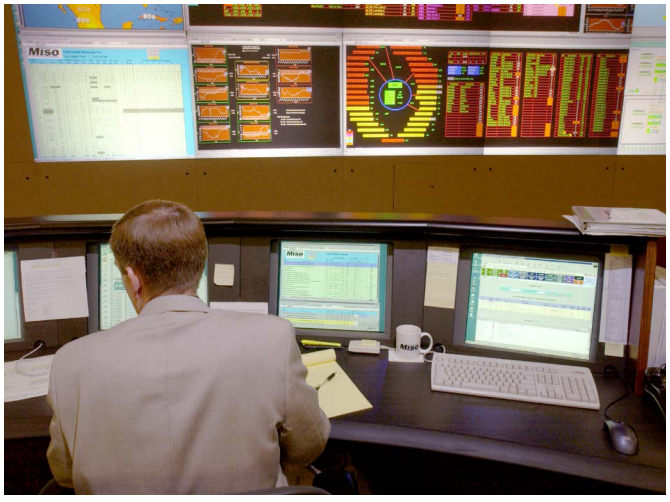
At the same time, the organization pushed forward on seams management. Early in the year, MISO and PJM executed a landmark Letter of Intent to build a joint and common wholesale market that would span 27 states. Days later, MISO, PJM, and SPP announced a Single Market Design Forum to help harmonize rules and drive consensus across the Eastern Interconnection. These steps reflected a broadening view of regional reliability: one where cooperation, not boundaries, shaped how power would move in real time.



Internally, MISO explored structural growth as well. In February, the boards of MISO and SPP authorized agreements to merge, setting in motion filings and regulatory steps to bring the two entities together. By spring, MISO had submitted documents to FERC to advance the merger and had also signed memoranda of understanding with TVA, Entergy, and Southern Company. These agreements aimed to align transmission service across the Midwest and Southeast, reinforcing the idea that reliability improves when systems share common tools and expectations. Though the planned SPP merger was ultimately canceled late in the year, the work done along the way strengthened relationships and clarified the organization's long-term strategy.

The year also brought new members and new business models. MISO's flexibility and independence made it an attractive platform for emerging transmission companies. In June, Ameren, FirstEnergy, and NIPSCO formed GridAmerica LLC, the fifth independent transmission company operating under MISO. That same year, the Michigan Electric Transmission Company (METC) successfully joined MISO's functional control, raising the count to 28 control areas within the footprint.

By the end of 2002, MISO's membership had grown to 72 entities, representing tens of thousands of miles of transmission and nearly 77,000 megawatts of generating capacity. But more than the numbers, the year demonstrated that the organization was ready to operate at scale. The decisions of 2002 accelerated the shift from fragmented, utility-by-utility coordination to a regional, standardized platform that could support a more interconnected grid.



2002 MILESTONES

- Regional transmission service launched
- Joint-market Letter of Intent signed with PJM
- MISO-PJM-SPP Single Market Design Forum established
- MOUs signed with TVA, Entergy, and Southern Company
- Formation of GridAmerica LLC
- METC integration completed

WHY IT MATTERED

Launching regional transmission service in 2002 removed barriers, expanded coordination, and demonstrated the value of unified market processes. These advancements strengthened the region's reliability framework, shaping the grid that tomorrow requires.

2003 — Strength Proven Under Pressure

Resilience, clarity, and organizational resolve

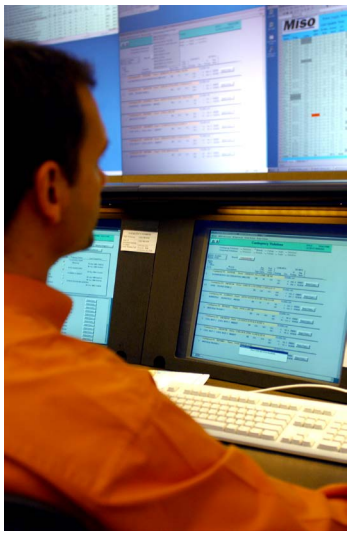
Certain years reveal exactly what an organization is made of.

For MISO, 2003 was that year, a period shaped by the August 14 blackout, the largest cascading outage in North American history, and a transformative moment that sharpened the region's focus on reliability. What began as a crisis quickly became a catalyst, accelerating MISO's evolution from a developing operator into a critical regional anchor. It was also a year marked by major steps in planning, cooperation, and market strategy, setting the stage for the organization's future role in the Eastern Interconnection.

The August 14 outage began in northern Ohio and cascaded through the Northeast and Canada, disconnecting tens of millions of customers. Within MISO's footprint, operators stabilized the system and coordinated restoration for affected areas, including Detroit and Cleveland. The event exposed weaknesses in visibility and coordination across the broader grid, weaknesses that MISO set out to address immediately. It became clear that reliability tools needed to be faster, broader, and more predictive. By the end of the year, MISO had advanced development of its State Estimator, a real-time monitoring application capable of analyzing tens of thousands of data points every few seconds. It also expanded control room visualization and alarming systems, building one of the most comprehensive real-time situational awareness platforms in the world.

But 2003 was not solely defined by emergency response. It was also a landmark year for long-term planning and regional collaboration. In June, the Board unanimously approved the first Midwest ISO Transmission Expansion Plan (MTEP), authorizing more than a billion dollars in grid improvements. This plan established a unified process for evaluating needs, prioritizing upgrades, and coordinating investments across multiple states, a significant step toward a regional planning discipline that had never existed at this scale.

Cooperation across system boundaries deepened as well. MISO filed its Joint Operating Agreement (JOA) with PJM Interconnection, creating a structure for coordinated planning, real-time operations, and congestion management. The JOA addressed long-standing seams issues and became a model for interregional coordination. It was one of the clearest signals that reliability could not be preserved through isolated action; it required shared tools, shared processes, and shared accountability.



The organization's market strategy also evolved. After years of preparation for energy market implementation, MISO chose to withdraw and refile its Energy Markets Tariff in October. The decision reflected a strategic pivot: to focus first on enhancing reliability tools and operational readiness before moving ahead with wholesale market launch. It was a recognition that reliability must precede competition, especially after the lessons of the blackout.

Meanwhile, organizational growth continued. GridAmerica, a multi-system independent transmission company formed by ATSI and NIPSCO, began operations under MISO in October, adding significant transmission mileage and further reducing pancaked rates for customers. And in November, state regulators established the Organization of MISO States (OMS), creating a formal venue for policy coordination across 15 jurisdictions.

By year's end, the State Estimator had become MISO's primary real-time monitoring tool, and the JOA with PJM had been fully executed and filed. The year closed with a renewed sense of purpose, measured not only in systems stood up or agreements signed, but in the clarity gained from crisis.

2003 MILESTONES

- First MTEP approved: $1.3B investment
- MISO–PJM Joint Operating Agreement filed
- Energy Markets Tariff withdrawn and refiled
- GridAmerica expands transmission capabilities
- Organization of MISO States (OMS) formed

WHY IT MATTERED

The events of 2003 revealed vulnerabilities in visibility and coordination, prompting significant improvements in reliability tools and practices. These lessons elevated expectations for regional situational awareness, shaping the grid that tomorrow requires.

2003 — Lessons from the Blackout

Insight, exposure, and system understanding

Some moments shift understanding and redefine what systems must become.



On an ordinary Thursday afternoon in August 2003, the eastern half of the United States was moving through a typical summer day, humid air, heavy air-conditioning load, and power lines carrying the seasonal strain of demand. Nothing about the early afternoon suggested that within hours, a vast portion of the grid would plunge into darkness. But as the day unfolded, a series of failures, technical, procedural, and human, triggered the largest blackout in North American history.

For millions across the Northeast and Midwest, the first signs were subtle: a flicker of lights, an unexpected silence as appliances clicked off, streets where traffic signals suddenly went dark. As systems collapsed, communities adapted instinctively. Intersections filled with cautious drivers navigating without guidance. Families gathered around battery-powered radios, seeking updates as twilight approached. With power out across major cities, evening commutes slowed, and neighborhoods settled into an unusual, hum-filled quiet. Though disruptions were widespread, the public response was largely steady and patient.

While the public saw the effects, grid operators across the region were witnessing something far more complex. Inside the Midwest ISO control room in Carmel, Indiana, the afternoon began like many others. Operators monitored a high-load summer day, tracking

familiar patterns of voltage sag and system stress. But shortly after noon, their view of the system blurred: the State Estimator, a critical tool that transforms field telemetry into a coherent real-time picture, stopped solving reliably. Status data from the field was not matching actual system conditions, limiting operators' ability to run contingency analysis, the essential "what-if" checks that help determine whether the grid can survive unexpected equipment losses.

Meanwhile, in northern Ohio, FirstEnergy's control room was facing a more acute challenge. Its alarm and logging system stalled mid-afternoon, freezing without sound or alerts. Operators had no indication that screens were no longer updating in real time. Calls began coming in from neighboring utilities, power plants, and reliability coordinators, reporting unusual voltage swings and equipment operations. But with displays stuck, those reports conflicted with what the operators saw, masking the early warning signs of a system under stress.

The blackout's origins were not dramatic at first: a major generator in northern Ohio tripped, removing crucial voltage support from a region already leaning heavily on imports. Soon after, multiple transmission lines sagged into overgrown vegetation and tripped, not because they were overloaded beyond emergency limits, but because summer heat and tall trees had erased safe clearance. Each line lost redirected more power onto an already weakening network, pushing voltages down and straining underlying systems. When the final major transmission line feeding the Cleveland-Akron metropolitan area automatically shut off to protect equipment from worsening conditions, the region could no longer support the remaining flows. The failure spread outward in seconds.

In the hours that followed, as portions of the Eastern Interconnection began separating into electrical "islands," MISO operators shifted rapidly from diagnosing the disturbance to coordinating recovery. At 4:19 p.m., MISO initiated the first NERC-wide coordinating call of the event, helping align neighboring regions on restoration priorities: forming stable islands, sequencing generator restarts, and re-closing ties only when models and field measurements indicated conditions were stable. Protection systems had worked as designed, isolating equipment before it was damaged, so recovery focused on re-energizing, not rebuilding, which ultimately shortened the path to restoration.

In the days that followed, MISO's approach was deliberate and public: avoid speculation, support federal and Canadian investigators, and pivot immediately toward long-term solutions. President and CEO James P. Torgerson articulated this direction in congressional testimony, emphasizing MISO's commitment to understanding what went wrong and preventing future recurrences. That commitment centered on improved visibility, stronger communications, and clearer operating authority.

By the end of 2003, several major improvements were already in place. MISO deployed a significantly expanded State Estimator, the largest of its kind at the time, as the primary, always-on view of the transmission network. Visualization improved dramatically with a much larger control-room video wall, giving operators real-time displays of flows, voltages, and outages across MISO's footprint and into neighboring regions. Alarm systems were redesigned with clearer thresholds and categories, and redundancy was strengthened across hardware, software, and backup control facilities.

The blackout also underscored the importance of coordination across regional seams. In 2004, MISO and PJM formalized a Joint Operating Agreement requiring robust real-time data exchange and adopting the "most conservative limit" principle for equipment they both monitored—ensuring decisions in tight system conditions defaulted to safety. Later that year, MISO, PJM, and the Tennessee Valley Authority signed a multi-regional data-exchange agreement, establishing shared protocols for operational visibility across a broader section of the Eastern Interconnection.

BLACKOUT ILLUMINATED MILESTONES

- August 14 blackout impacts 50 million people
- MISO stabilizes operations and supports restoration
- Blackout lessons reinforce reliability-first posture
- State Estimator development accelerated
- Visualization and alarming systems expanded

Training became a defining pillar of MISO's reliability posture. Emergency drills, tabletop exercises, and simulator scenarios were expanded so operators could practice responding to rare, fast-moving events. A formal Reliability Charter clarified roles and authorities across MISO, local control areas, and neighboring coordinators, eliminating ambiguity about who makes decisions when seconds matter. Independent auditors echoed the significance of these changes, with NERC's 2004 review highlighting MISO's "extensive changes," improved visibility, and industry-leading backup control facilities.

Looking back, the 2003 blackout revealed more than a cascade of technical failures. It highlighted the fragility of interconnected infrastructure and the importance of shared responsibility across regions. It demonstrated that visibility is not merely a set of screens, but a system, one that must continue functioning even when individual components fail. And it proved that preparation transforms confusion into coordinated action: drills, procedures, and relationships matter long before a crisis unfolds.

For MISO, the event was a defining inflection point. It accelerated work already underway, drove new investments in tools and procedures, and influenced a reliability-first culture that remains foundational today. As documented in the organization's 2003 Annual Report, reliability would remain the core function, but with a higher bar and a more sophisticated, data-driven approach.

WHY IT MATTERED

The blackout exposed critical gaps across the grid and accelerated improvements in monitoring, communications, and preparedness. This strengthened MISO's role in wide-area reliability, shaping the grid that tomorrow requires.

2004 — Advancing Reliability and Market Foundations

Challenge, advancement, and steady growth

Progress requires discipline to reinforce what exists while building what's next.

Following the lessons of the 2003 blackout, the organization entered a "bellwether year" focused on two fronts: completing rigorous reliability enhancements and preparing the new energy markets for their long-awaited launch. It was a year defined by consolidation, testing, and an all-hands push toward a seamless Day-One integration of markets and operations.

Early in the year, MISO conducted a comprehensive review of operating agreements to confirm authority over voltage management, reactive reserves, and emergency load-shedding, reinforcing the responsibility that comes with regional reliability coordination. At the same time, the organization was implementing recommendations from NERC's Reliability Coordination Audit Team. By June, MISO formally certified to NERC that it had met expectations across visualization tools, communications, and operator training. The work of strengthening systems and procedures was steady and methodical, reflecting the seriousness of the reliability landscape in the post-blackout era.

Even as reliability improvements advanced, strategic developments reshaped the region's operations. Ameren and Illinois Power rejoined MISO, reversing earlier departures and restoring both their assets and their role within the regional structure. Their return not only expanded MISO's footprint but also demonstrated renewed confidence in its direction. This reintegration returned a portion of their earlier exit fees, while maintaining deferred revenue from members that did not return. By late September, their transmission systems were fully reintegrated, making the footprint more cohesive ahead of market launch.



Operationally, 2004 was the “final stretch”, a half-million hours of market testing conducted over more than two years. These trials validated market software, dispatch functions, settlement processes, operator interactions, and system behavior across thousands of simulated conditions. The year culminated in two System Operations tests in December, demonstrating MISO’s ability to dispatch generation across the footprint. These tests were not financially binding, but they were critical proof points that Day-One markets could function alongside real-time reliability operations.

As the market preparations intensified, MISO also worked on external alignment. The organization sought an extension for the MISO-PJM “common market” implementation date, proposing to move it to 2007 to ensure careful coordination. It also addressed a FERC fee adjustment related to earlier transmission volumes, highlighting the complexity and scale of the regional rate environment. Meanwhile, GridAmerica, already operating under MISO, continued contributing independent transmission capabilities that improved regional alignment and reduced barriers for customers.



2004 MILESTONES

- NERC reliability recommendations completed
- Ameren and Illinois Power rejoin MISO
- Market dispatch tests demonstrate capability
- Initial FTR allocations conducted for the first time
- Extension requested for MISO–PJM common market
- 500,000 hours of market testing completed

MISO’s economic presence also gained recognition. In November, the organization applied for an Indiana state grant supporting high-tech job growth, a reflection of the regional value created by building a modern grid operator in Carmel. Internally, governance continued to evolve, with the Board overseeing transitions and reaffirming leadership standards for directors.

By year’s end, MISO entered a consolidated operational mode, integrating Day-One reliability functions with market systems in preparation for the April 1, 2005 market launch. The final tally, 500,000 hours of market trials, underscored the scale of preparation behind one of the industry’s most complex transitions.

WHY IT MATTERED

In 2004, MISO reinforced its reliability foundation and prepared for market launch through extensive testing and coordination. These efforts aligned operations and markets for future demands, shaping the grid that tomorrow requires.

2005 — Opening the Midwest Energy Markets

Expansion, collaboration, and regional possibility

Transformative milestones broaden what a region can achieve together.



After more than two years of preparation and hundreds of thousands of hours of testing, the 2005 launch of the Midwest Energy Markets ushered in a new era of transparency, efficiency, and coordinated dispatch. This milestone year was marked by intense operational challenges, strengthened regional partnerships, and the first real-world demonstration of a market design built to support reliability at scale.

The defining achievement of 2005 came at 12:01 a.m. on April 1, when the Day-Ahead, Real-Time, and Financial Transmission Rights markets went live. This transition introduced Locational Marginal Pricing across more than a thousand nodal locations and enabled centralized, security-constrained dispatch for generation serving 15 states and Manitoba. With the new markets came price transparency, improved operating efficiency, and coordinated decision-making across a vast footprint. By the end of the year, these markets were processing an average of $3 billion in monthly transactions, a clear sign of their scale and economic significance.

But market success depended on more than software. Operational resilience was put to the test almost immediately. An unusually hot summer drove four successive record peaks across June, July, and August. MISO's operators balanced real-time reliability with the new market systems, demonstrating that market participation and reliability coordination could work hand-in-hand. The St. Paul control center later earned full compliance in a December NERC audit, validating that reliability remained at the heart of every operational decision.

The year also strengthened regional cooperation. MISO entered into a Joint Reliability Coordination Agreement with PJM and TVA, expanding cross-organizational visibility and operational alignment. Duke Power retained MISO as its Independent Coordinator of Transmission, reinforcing confidence in the organization's neutrality and technical capability. These partnerships reflected a growing understanding: regional reliability requires regional collaboration, supported by shared tools and common processes.

Strategically, the year included important governance developments. The Board welcomed new members, strengthened oversight, and approved the 2005 MTEP, which recommended nearly $3 billion in transmission investment through 2009. These investments signaled a long-term commitment to modernizing the grid, reducing constraints, and preparing for future market growth.

Several external milestones also shaped the year. A financial audit from FERC confirmed sound performance across 2001–2004. Twelve governors across the Midwest signed a protocol supporting regional transmission planning—an important

2005 MILESTONES

- Day-Ahead/Real-Time/FTR markets launched
- Four peak records managed successfully
- NERC audit confirms full compliance
- MISO-PJM-TVA coordination agreement signed
- MTEP05 approved: $2.9B investment
- First annual stakeholder meeting held



public endorsement of the emerging regional model. And MISO hosted its first Annual Stakeholder Meeting, drawing more than 200 participants and elevating transparency and engagement in decision-making.

Not all developments pointed in the same direction: some members, including LG&E and Kentucky Utilities, filed notices to withdraw. Later in the year, Minnesota Power and SIPC also provided formal exit notices. Yet even these decisions reinforced the importance of flexibility and continued dialogue as the region adjusted to new market structures.

By the end of 2005, the Midwest Energy Markets were fully operational, reliability performance was strong, and regional coordination was deeper than ever. The year closed with confidence, not only in the market platform itself, but in the organization's ability to manage complexity, adapt to demand, and serve as a dependable reliability partner across the region.

WHY IT MATTERED

The launch of the Midwest Energy Markets fundamentally transformed how electricity was dispatched, priced, and coordinated across the region. This milestone marked a new chapter in regional reliability, shaping the grid that tomorrow requires.

Era III — Integration and Transformation (2006–2010)

Strengthening Markets, Expanding Planning, and Preparing for a Renewable Future

The momentum built during MISO's early market years carried into 2006, when the organization entered a period defined by deeper integration and steady adaptation to a changing grid. This era marked a shift from simply operating markets to improving them, as MISO worked to balance rising operational demands with a more forward-looking approach to planning, technology, and renewable integration.

Market maturity shaped much of this progress. As the Midwest Energy Markets reached full stride, MISO refined dispatch, expanded operator training, and strengthened coordination across an increasingly complex footprint. Rising peaks, severe storms, and periods of economic uncertainty tested system operations. Through these challenges, the launch of the Ancillary Services Market and the consolidation of Balancing Authority functions delivered greater efficiency and more consistent regional reliability. Enhanced forecasting tools, improved commitment logic, and close collaboration with member utilities contributed to a more capable and responsive market environment.

At the same time, renewable ambitions accelerated. Wind proposals quickly exceeded available transmission capacity, prompting important reforms to the interconnection process and pushing transmission planning to the forefront of regional strategy. Successive MTEP cycles and regional studies outlined the scale of investment needed to support new development, emerging policy goals, and long-term reliability.

Technology and innovation also became central to the era. MISO deployed early synchrophasor technology, partnered with neighboring RTOs on wide area visibility tools, and strengthened situational awareness to support a grid characterized by more dynamic and variable resources. Leadership changes offered continuity during this period of rising expectations and growing responsibility.

By 2010, MISO had become a stronger and more forward-looking institution. Era III advanced markets, modernized operations, expanded planning capabilities, and positioned the region for the challenges and opportunities of a rapidly evolving energy landscape

2006 — Maturing as a Regional Market Leader

Excellence, confidence, and organizational growth

Leadership grows from standards consistently upheld.

As 2006 began, the Midwest ISO found itself at a pivotal crossroads: the first full year of energy market operations was underway, and the organization was poised to prove that its bold experiment in regional coordination could deliver on its promise of reliability, efficiency, and value.

The year began with a changing of the guard. After guiding the Midwest ISO through its formative years and the launch of the Midwest Energy Markets, CEO Jim Torgerson passed the torch to T. Graham Edwards, who stepped in first as interim and then as permanent President and CEO. Edwards, a steady hand with deep experience in public power, brought a renewed focus on operational excellence, cost control, and stakeholder value.



CEO Jim Torgerson



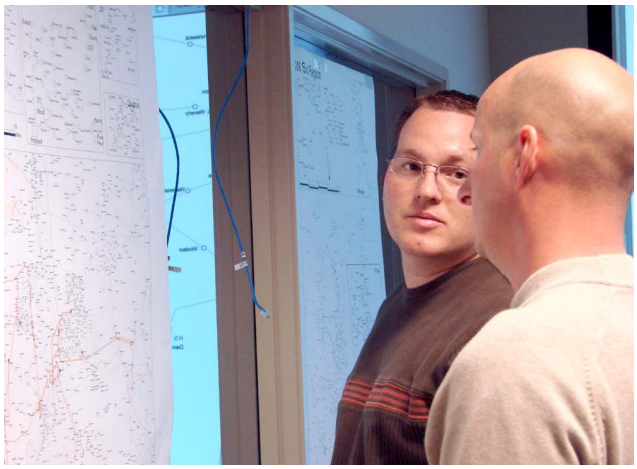
With the markets now in steady-state operation, 2006 became a proving ground. The Midwest Energy Markets cleared more than $24 billion in transactions, providing a transparent, competitive platform for buying and selling power across the region. The organization's control rooms in Carmel and St. Paul managed record-setting demand as summer heat blanketed the Midwest. On July 17, the system met a new peak of 132,658 megawatts in its reliability footprint, only to surpass it two weeks later with a staggering 136,520 megawatts. These record numbers were a testament to the effectiveness of the market design and the preparedness of the operations teams, who kept the lights on for millions even as temperatures soared.

Reliability was tested in more ways than one. Severe storms swept through Missouri, Illinois, and the Dakotas, toppling transmission lines and plunging communities into darkness. In Springfield, Illinois, two tornadoes left 65,000 customers without power. The Midwest ISO's regional perspective proved invaluable. By monitoring 240,000 data points every two seconds and coordinating closely with local utilities, the organization helped orchestrate swift restoration efforts. Emergency procedures were put to the test, and the lessons learned would shape future readiness. Later in the year, the Midwest ISO led the industry's largest-ever emergency preparedness and restoration drills, bringing together more than 750 participants from member companies and neighboring systems to simulate complex, multi-day recovery scenarios.

Amid these operational challenges, the Midwest ISO pressed forward with its long-term vision. The 2006 Midwest ISO Transmission Expansion Plan (MTEP06) was a sweeping blueprint for $3.6 billion in new transmission projects through 2011. The plan targeted the elimination of key congestion points and expected to reduce regional congestion costs by $2 billion annually. For the first time, regional cost-sharing for baseline reliability projects was introduced, ensuring that the benefits and burdens of new infrastructure would be distributed fairly across the footprint.

Innovation was not limited to wires and steel. In April, the Midwest ISO filed a landmark report with FERC on consolidating Balancing Authority (BA) functions and establishing an Ancillary Services Market. The analysis projected annual net benefits of up to $177 million, with greater efficiency and reliability as the region moved toward a single, coordinated approach to reserves and regulation. Stakeholders rallied around the vision, recognizing the potential for cost savings and operational improvements.

Throughout the year, the Midwest ISO's commitment to transparency and stakeholder engagement remained unwavering. The organization welcomed new members, expanded its market participant base, and worked closely with state regulators and the Organization of MISO States. Standard & Poor's affirmed the Midwest ISO's A+ credit rating, a reflection of sound financial management and growing confidence in the organization's mission.



2006 MILESTONES

- Leadership transition to new CEO
- Energy markets cleared more than $24B
- Record demand managed reliably
- MTEP06 proposed $3.6B investment
- Transmission cost-sharing introduced
- Balancing Authority consolidation analysis filed with FERC

As 2006 drew to a close, the Midwest ISO stood taller than ever, tested by storms, strengthened by collaboration, and guided by a clear vision for the future. The boundaries of excellence had expanded, but the core mission to keep the lights on and deliver value, remained unchanged.

WHY IT MATTERED

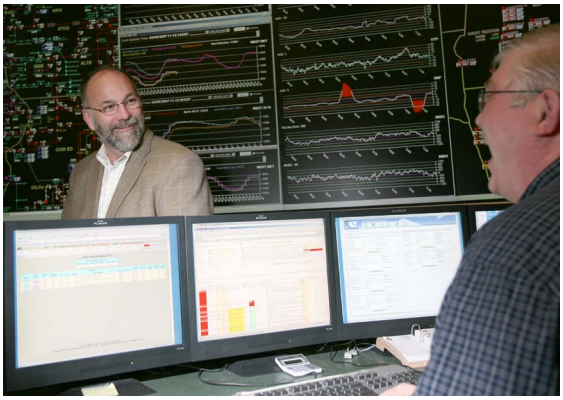
Record demand, severe storms, and expanded planning in 2006 affirmed MISO's market design and reliability posture. These experiences clarified the system's emerging needs, shaping the grid that tomorrow requires.

2007 — Building the Platform for Integration

Readiness, alignment, and regional value

Momentum builds when preparation becomes part of identity.

The Midwest ISO entered 2007 with momentum and a clear sense of purpose. The previous year's record-setting demand and operational challenges had validated the organization's market design and reliability focus. Now, MISO's leaders and teams turned their attention to the next phase: preparing for the launch of the Ancillary Services Market (ASM) and the consolidation of Balancing Authority functions, two multi-year initiatives that would transform how the region managed reserves, regulation, and reliability.



Throughout 2007, MISO worked closely with its members and stakeholders to lay the technical, operational, and regulatory groundwork for these changes. The year began with the successful launch of the Midwest Contingency Reserve Sharing Group, a coordinated effort that pooled reserves across 35 balancing authority areas. This initiative enabled participants to reduce the amount of contingency reserves held in the region by nearly 1,100 megawatts, resulting in significant annual savings and a more efficient, reliable response to system emergencies.



As the ASM moved from concept to implementation, MISO completed critical filings with the Federal Energy Regulatory Commission, outlining the market structure and the steps required for functional consolidation. The organization's teams focused on business process testing, infrastructure upgrades, and operator training, ensuring that the systems and people would be ready for the market's launch in the near future.

Reliability remained at the heart of MISO's mission. The organization continued to invest in operator training, scenario-based drills, and readiness audits. In 2007, MISO's real-time operations staff participated in extensive training and industry-leading restoration exercises, reinforcing a culture of preparedness and continuous improvement. The NERC Reliability Readiness Audit recognized several "Examples of Excellence" in MISO's practices, from simulation-based training to advanced monitoring and restoration protocols.



Transmission planning advanced in parallel. The 2007 Midwest ISO Transmission Expansion Plan (MTEP07) identified twenty-eight new projects to address reliability needs, relieve congestion, and support the integration of new generation resources, including renewables. The plan built on the foundation of previous years, with a focus on regional cost-sharing and stakeholder collaboration to ensure that investments would deliver broad, lasting value.

2007 MILESTONES

- Contingency Reserve Sharing Group launched
- Contingency reserves reduced by 1,100 MW
- ASM filings completed
- Operator training and drills expanded
- MTEP07 approved: $2.2B investment
- NERC audit highlighted "Examples of Excellence"

Market operations also continued to mature. MISO's Day-Ahead and Real-Time Markets maintained high levels of performance and transparency, with on-time results and improved forecasting. The organization's commitment to stakeholder engagement remained strong, as MISO worked closely with state regulators, the Organization of MISO States, and market participants to refine market rules and ensure alignment with regional needs.

By the end of 2007, MISO had positioned itself for the next leap forward. The year's achievements in reserve sharing, market preparation, reliability, and planning created a platform for the launch of the ASM and the transition to a single, coordinated Balancing Authority. The organization's focus on readiness, collaboration, and innovation ensured that MISO would continue to deliver reliability and value as the grid evolved.

WHY IT MATTERED

Reserve sharing, transmission planning, and market readiness in 2007 positioned MISO for integrated operations. These steps advanced regional reliability coordination, shaping the grid that tomorrow requires.

2008 — Preparing for Market Expansion

Complexity, evolution, and system learning

Challenge becomes opportunity when systems learn to adapt.

In 2008, the Midwest ISO balanced the daily demands of operating one of the world's largest energy markets with the careful work of strengthening the systems and coordination needed for the next evolution of its markets. The year unfolded as a story of sharpening capabilities, deepening regional collaboration, and laying the final groundwork for the integration of ancillary services and the transition to a single Balancing Authority on January 6, 2009.

Much of the effort focused on ensuring the organization could manage the region as one coordinated reliability footprint. Teams across the Midwest ISO footprint participated in months of detailed operational simulations, gaining 170 hours of hands-on experience that mirrored real-time conditions. These exercises tested how the system would respond to regulation signals, reserve deployment, and moment-to-moment balancing under a unified operational model. In April, after reviewing the organization's tools, training programs, procedures, and coordination processes, NERC certified the Midwest ISO as a Joint Registered Balancing Authority. This was an important milestone that affirmed the organization's readiness to manage reliability across the full region.



Operational strength was evident in other ways. In October, the Midwest ISO and member utilities conducted a two-day power system restoration drill. More than 900 participants battled a blackout scenario that required them to rebuild the ISO's grid in a training simulator. The Midwest ISO also worked to make its markets run more smoothly. Better forecasting and improved tools for scheduling and dispatching power helped operators use resources more efficiently and reduced overall costs. These improvements made prices more consistent across the region, showing that the markets were becoming stronger and more reliable. As operational readiness strengthened, attention turned to the long-term infrastructure needed to support the region's growing ambitions.

Planning and infrastructure development were equally prominent. The Board approved MTEP08, a regional plan recommending 332 new projects totaling $2.4 billion, including more than 1,900 miles of new or upgraded transmission lines. Growing interest in renewable resources intensified the need for new transmission, prompting collaborative efforts across the region. The Midwest ISO supported the launch of the Upper Midwest Transmission Development Initiative, a multi-state partnership focused on identifying wind resources and developing cost-effective transmission solutions. At the same time, the Joint Coordinated System Plan, an unprecedented interregional study spanning most of the Eastern Interconnection, advanced long-term, energy-based planning for future transmission and generation needs. These regional planning efforts unfolded against a backdrop of unprecedented interest in new generation.



CEO T. Graham Edwards

A surge of new generation proposals placed heavy pressure on the interconnection study process. In response, the Midwest ISO worked with stakeholders and secured FERC approval for comprehensive queue reforms that introduced milestone-based progression, consolidated study groups, and a "fast-lane" track for advanced projects. These changes positioned the organization to more efficiently manage the 84,000 megawatts of proposed generation awaiting study. All of this work set the stage for a pivotal step at the year's end.

As 2008 wound down, the Midwest ISO completed its final readiness checks and began accepting ancillary services offers on December 30. The organization entered 2009 ready for the integration of ancillary services into the market and the assumption of Balancing Authority responsibilities across the region.

2008 MILESTONES

- Joint Registered Balancing Authority certified
- Forecasting and dispatch tools improved
- MTEP08 approved: $2.4B investment
- Upper Midwest transmission initiative launched
- Joint Coordinated System Plan advanced
- Queue reforms approved by FERC
- Ancillary services offers accepted 12/30

WHY IT MATTERED

Operational readiness, queue reforms, and Balancing Authority preparations in 2008 strengthened MISO's ability to manage a unified reliability footprint. These advancements equipped the region for growing complexity, shaping the grid that tomorrow requires.

2009 — Delivering Reliability Through Market Design

Resilience, capability, and coordinated markets

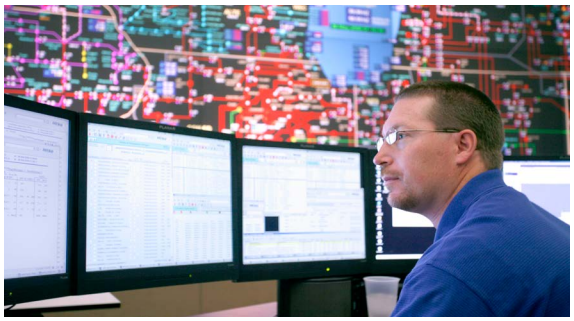
Reliability deepens when systems reveal what strength requires.

The Midwest ISO entered 2009 in a period of transition. The region faced economic uncertainty, changing electricity use, and accelerating interest in renewable energy. At the same time, the organization concluded a planned leadership shift. On January 16, John R. Bear became Chief Executive Officer, succeeding T. Graham Edwards, who remained through April to support the handoff. The transition reflected continuity and preparation at a moment when the organization was adapting to new regional demands.

Only days before this leadership change, the Midwest ISO reached a major milestone. On January 6, it launched the Ancillary Services Market (ASM) and began operating as the region's consolidated Balancing Authority. After years of design and testing, a patchwork of separate balancing areas became a single footprint. Operators gained a unified view of real-time conditions, improving the coordination of reserves and regulation across the region. This shift marked a new stage in how the organization approached daily reliability.



New CEO John Bear and T. Graham Edwards



The year quickly showed why this coordinated structure was needed. The economic recession pushed demand lower than expected, adding uncertainty to forecasting and operations. Winter brought sharp cold spells that created seasonal peaks, followed by unusually warm periods that forced operators to manage minimum generation. These swings challenged generation fleets and operating practices, and the new market structure helped the organization respond with greater flexibility. Congestion risks also increased in certain areas, reinforcing the need for long-term system improvements.

Financial strain across the region gave the organization's value proposition added importance. Updated analysis showed substantial annual benefits driven by efficiencies in coordinated energy and reserves, improved scheduling tools, and shared reserves across the footprint. These savings supported utilities and consumers during a difficult economic year and demonstrated the value of regional coordination. As system conditions shifted, operators and planners relied increasingly on the advantages delivered through the market.

Renewable development added further urgency. Wind proposals surged across the footprint, stressing the interconnection queue and exposing gaps in existing transmission. The 2009 Transmission Expansion Plan advanced projects aimed at relieving congestion, improving reliability, and preparing the grid for future renewable policies. Interregional studies made clear the scale of investment required to support large amounts of new wind generation, indicating the need for significant long-term transmission development. These efforts continued the organization's work to align planning with a changing resource mix.

Innovation also advanced. The organization received a federal grant to deploy new grid monitoring technology, improving real-time visibility as wind resources grew. These tools strengthened situational awareness and enhanced the ability to detect and respond to system stress. Alongside these technical improvements, the Midwest ISO completed regulatory and compliance reviews with strong results. A detailed federal audit concluded with no findings, and a reliability and cybersecurity audit confirmed adherence to industry standards. These outcomes reflected a disciplined organization operating through a complex year.



2009 MILESTONES

- Leadership transition to new CEO
- ASM launched
- Single Balancing Authority established
- Wind development accelerated
- MTEP09 approved: $903M investment
- Queue reforms implemented
- DOE grant expanded grid monitoring tools

As 2009 came to a close, the Midwest ISO had reinforced its position as a regional reliability leader. The organization navigated economic challenges, launched a major new market structure, responded to rapid renewable growth, and strengthened the planning and tools needed for an evolving grid. The work of the year set the stage for the next phase of market integration and regional transformation.

WHY IT MATTERED

Amid economic uncertainty, MISO demonstrated resilience through coordinated energy and reserves, enhanced monitoring, and renewable integration. These capabilities advanced regional reliability, shaping the grid that tomorrow requires.

2010 — Planning for a Modernized Grid

Technology, foresight, and modernization

A grid evolves when planning keeps pace with possibility.

In 2010, MISO confronted a grid in transition. Renewable development accelerated across the region, policy direction grew less certain, and the generation fleet continued to evolve. These pressures required steady operations, smarter tools, and a deeper focus on long-range planning. MISO responded by sharpening its market systems, modernizing grid visibility, and strengthening the planning framework that guided regional investment.



Operational improvements were a central theme. As wind capacity expanded, operators needed better ways to manage variability, congestion, and pricing challenges. MISO worked to refine its commitment models, improve real-time price formation, and advance tools that could more effectively integrate intermittent resources. These efforts helped the markets adapt to changing conditions while preserving transparency and reliability.



Planning work took on added importance as policymakers and utilities considered multiple potential futures. Through the MTEP10 cycle, MISO and its stakeholders advanced more than a billion dollars in recommended transmission projects designed to support reliability, address congestion, and enable renewable growth. The organization evaluated a range of policy scenarios and identified a candidate set of Multi-Value Projects, reflecting the region's need for transmission solutions that could serve reliability, market efficiency, and public policy at the same time.

Grid modernization also moved forward. With support from a federal grant, MISO began deploying advanced phasor measurement technology that offered operators a more detailed view of system conditions. The organization also partnered with PJM to coordinate smart grid development and synchronize data across much of the Eastern Interconnection. These investments strengthened situational awareness and improved the tools available for detecting and responding to grid stress.



Throughout the year, MISO prepared for higher demand as the footprint expanded and renewables continued to grow. Strong reserve margins, enhanced operating procedures, and improved forecasting supported reliable system performance even as the energy landscape shifted. New members added capacity and helped simplify coordination across the region, reinforcing the value of shared operations and planning.



Behind the scenes, compliance and internal discipline remained a steady anchor. MISO enhanced documentation, strengthened its processes, and worked to meet evolving NERC and cyber standards. The organization viewed compliance as an essential part of reliability and operational excellence.

By the end of 2010, MISO had deepened its role as a planner, operator, and innovator for the region. The year's work made it clear that the grid of the future would require new technologies, expanded collaboration, and a planning approach capable of responding to rapid change. In an environment shaped by policy uncertainty, renewable growth, and reliability demands, MISO positioned itself to provide stability and value across a shifting landscape.

2010 MILESTONES

- Market tools refined for wind integration
- Real-time price formation improved
- MTEP10 approved: $1.2B investment
- Multi-Value Project candidates identified
- Smart grid coordination expanded with PJM
- Compliance & cybersecurity practices enhanced

WHY IT MATTERED

Growth in renewables, strengthened planning tools, and new visibility technologies in 2010 prepared the region for a more dynamic grid. These steps improved long-term reliability planning, shaping the grid that tomorrow requires.

Era IV — Readiness and Resilience (2011–2015)

Uniting a Broader Footprint, Advancing Regional Planning, and Navigating a Changing Grid

From 2011 to 2015, MISO entered one of the most transformative periods in its history. This era was defined by the expansion of the regional footprint and the maturation of long-range planning as the organization prepared to operate a system that stretched from the Canadian border to the Gulf of Mexico. Integrating the South Region created one of the largest coordinated power systems in the world and reshaped what it meant to operate a reliable and interconnected grid.

Foundational investments supported this transition. Building on the Multi-Value Project portfolio and successive MTEP cycles, MISO strengthened a transmission framework designed to support renewable development, emerging policy goals, and long-term system reliability. At the same time, environmental regulations and a shifting resource mix increased the importance of gas-electric coordination, operational preparedness, and predictable market structures. These pressures required both innovation and discipline as the footprint grew more diverse.

Preparing for integration required extensive coordination across operators, utilities, and regulators. Teams aligned systems, strengthened coordination agreements, and ensured market procedures were ready before the South Region formally joined MISO markets in December 2013. The seamless integration validated years of planning and collaboration. Over the following two years, the expanded footprint was tested by new peaks, policy changes, and greater interdependence across regions. These tests demonstrated the resilience and adaptability of the unified system.

By 2015, MISO had become a truly mid-continental regional transmission operator. The organization was larger, more capable, and better prepared for the evolving energy landscape. Era IV strengthened planning, coordination, and operational practices and positioned the region to respond effectively to the complex challenges that would define the years ahead.

2011 — Guiding Growth Across a Changing Region

Expansion, long-view planning, and structural shift

Transformation accelerates when vision expands faster than the footprint.

2011 opened with the region at a moment of profound reconsideration. Aging infrastructure, emerging environmental rules, and the momentum of renewable development all pointed toward an energy future that could not be supported by legacy assumptions. Across states and utilities, conversations repeatedly circled back to the same questions: How would the system absorb the impact of new regulations? What would reliability require as coal units faced unprecedented pressures? And how could the region position itself to harness the long-term value of a growing renewable resource base? The grid was ready for change; what it needed was direction.

That direction took shape through the most ambitious planning effort in MISO's history. Over 18 months, planners, transmission owners, regulators, and policymakers explored hundreds of scenarios examining how shifts in fuel, policy, and load would reshape the grid. The outcome was MTEP11, anchored by a portfolio of Multi-Value Projects that would carry low-cost energy across states, interconnect new renewable resources, and strengthen the backbone of the



region for decades. These projects were more than infrastructure; they were the structural response to an evolving energy landscape.



At the same time, the prospect of a larger regional system emerged with new clarity. Entergy's announcement that it intended to join MISO marked a turning point in long-running conversations about the value of regionalization in the South. The addition of 15,000 miles of transmission and 30,000 megawatts of generation would dramatically expand the footprint, diversify resources, and deepen opportunities for economic dispatch. Regulatory proceedings began across multiple jurisdictions, each assessing how such an integration could reshape costs, benefits, and system operations.

Momentum continued as the year unfolded. A key federal clarification of joint operating agreement provisions between MISO and SPP removed a major source of uncertainty, giving stakeholders confidence that cross-border coordination could support a broader footprint. State reviews in Arkansas and Louisiana progressed, focusing on how to allocate benefits fairly and how to align local oversight with regional market structures. What had once been conceptual was steadily becoming practicable.

Operational events reinforced why this work mattered. A severe heat wave drove demand to a new market record pushing equipment and reserves to their limits. Operators in Carmel and St. Paul navigated long stretches of high load and tight margins, managing conditions that demanded constant attention. The experience served as a tangible reminder: as the resource mix evolved and regulatory pressures mounted, every megawatt and every interface carried heightened importance. Forward-looking planning wasn't an option, it was a necessity.

2011 MILESTONES

- Entergy announced intent to join MISO
- FERC affirmed MISO-SPP capacity sharing
- EPA rules threatened reliability
- MVP benefits modeled at up to 3x costs
- MTEP11 approved: $6.5B investment

By the close of 2011, the region's trajectory had come into focus. MTEP11 established the long-term transmission vision required for a changing fleet. Entergy's commitment laid the groundwork for a more diverse and efficient market footprint. And the heat-driven operational test underscored why scale and coordination were increasingly central to reliability. The year wasn't simply about preparing for change, it was about shaping the conditions that would allow the region to meet it with confidence.

WHY IT MATTERED

A new transmission portfolio and the prospect of footprint expansion in 2011 redefined regional planning and reliability expectations. These developments prepared the region for longterm change, shaping the grid that tomorrow requires.

2012 — Turning Ambitious Plans Into Action

Execution, integration, and forward motion

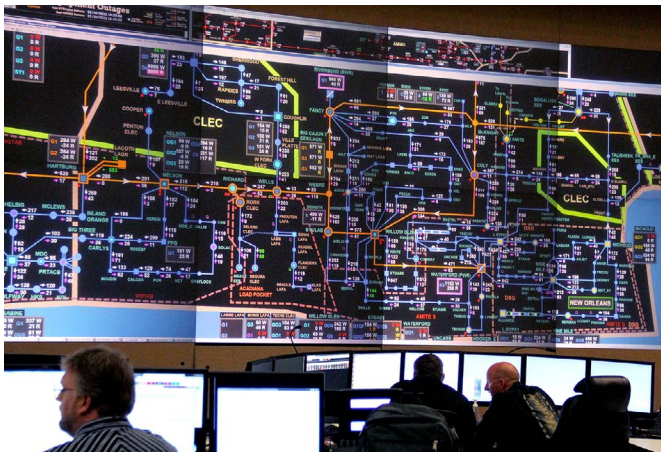
Progress takes hold when transition becomes readiness.

2012 opened with a sense of urgency. New federal air-quality rules were tightening on the horizon, and MISO's analyses showed that more than half of the coal fleet would need retrofits or face retirement. It was a future that demanded improved outage coordination, stronger fuel diversity, and sharper coordination across industries. At the same time, the region was leaning more heavily on natural gas, exposing vulnerabilities in storage, pipeline capacity, and scheduling practices. The year would test whether long-planned strategies could translate into operational confidence.



Turning strategy into action began inside the control room. Operators adopted a Look Ahead Commitment tool, giving them a clearer view of near-term system needs and enabling faster, more efficient decisions in the five-minute market. Stakeholders gathered with neighboring regions to begin the new era of Order 1000, an effort to rethink how transmission is planned and paid for across boundaries. Later, federal regulators conditionally approved enhancements to MISO's resource adequacy construct, opening the door to a more flexible approach for placing capacity where the grid needed it most. Together, these efforts signaled a shift from planning for change to living through it.

Yet the year's most pressing challenge lay at the intersection of fuels. With gas-fired generation rising and compliance-driven outages looming, MISO convened leaders from the electric and natural gas industries to understand how both systems would adapt. The discussions revealed a shared truth: while gas supply was plentiful, the infrastructure to deliver it, pipelines, storage, and scheduling, had not evolved at the same pace. Harmonizing the two industries would be essential to ensuring firm power during periods of fleet transition. It was a recognition that the region's resilience would increasingly depend on collaboration beyond the electricity sector.



Amid these operational shifts, the year delivered a vivid milestone in the region's growing renewable story. For the first time, MISO's wind generation surpassed 10,000 megawatts, briefly supplying more than a quarter of all energy on the system. The achievement marked a turning point, clear evidence that the grid could reliably integrate large volumes of variable generation and that the region's investment in cleaner resources had become part of everyday operations.

Meanwhile, the South Region moved steadily toward joining MISO's footprint. Regulatory commissions across Louisiana, Arkansas, Texas, Mississippi, and New Orleans examined the benefits of integration. For some states, approval came

swiftly; for others, it required careful negotiation. But by autumn, the direction was certain. The footprint was set to extend from the Upper Midwest to the Gulf Coast, bringing new scale and diversity to the regional system.

Infrastructure investments continued in parallel. Synchrophasor analytics were deployed into operations, giving system operators time-synchronized visibility into grid behavior and sharpening their understanding of system dynamics. In Minnesota, construction began on a new control center in Eagan. And in December, the Board approved seven new transmission-owning members and MTEP12, a portfolio of 242 projects that would reinforce reliability, improve market efficiency, and support the growing mix of resources across the footprint.

2012 MILESTONES

- Look Ahead tool deployed
- Enhanced resource adequacy approved
- Entergy integration approvals advanced
- Ground broken on Eagan control center
- MTEP12 approved: $1.5B investment
- Wind output surpassed 10GW

By the end of 2012, MISO had turned transition into capability. The region strengthened its operational tools, deepened collaboration between gas and electric operators, advanced a major expansion to the South, and demonstrated its ability to reliably integrate fast-growing wind resources. The grid had held steady under pressure, and the foundation was set for a broader, more resilient system ready to meet the complex future unfolding ahead.

WHY IT MATTERED

Environmental pressures, gas-electric coordination, and readiness work in 2012 equipped the region for a shifting fleet and emerging reliability risks. These efforts strengthened preparedness for future transitions, shaping the grid that tomorrow requires.

2013 — Unifying the Expanded Footprint

Connection, cohesion, and shared operation

Integration succeeds when diverse systems operate as one.

At the start of 2013, the region stood on the edge of a transformation that would reshape the map, expand the grid's reach, and require the most complex integration effort MISO had ever undertaken.

For all involved, a sense of momentum took hold. Regulatory approvals from the previous year had opened the door for Entergy and its neighboring utilities to join the MISO system. Now the work shifted from decisions on paper to readiness in practice. The task was immense: merging a four-state electric system into the broader regional framework, aligning operations across thousands of miles, and preparing market participants for a new way of working. Expanding the footprint promised greater fuel diversity, a larger pool of generation resources, and efficiencies that only a regional market could deliver.

Integrating the South region required strengthening the foundations that would support a larger system. MISO introduced its first annual capacity auction under the enhanced resource adequacy construct, reinforcing that the region had ample resources to meet demand and demonstrating how transparent market mechanisms could support reliability. At the same time, summer readiness

studies showed a comfortable reserve margin heading into the warm months. These findings were encouraging, but they also sharpened awareness of the challenges just beyond the horizon: tightening reserve margins in future years, the continued evolution of the generation fleet, and the growing dependence on natural gas as environmental regulations pushed older coal units toward retirement.

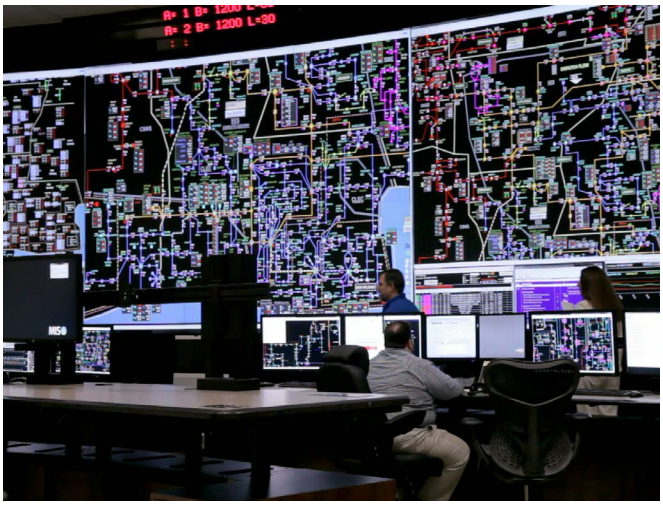


The integration effort reached an important milestone as MISO expanded its reliability coordination services to eight new entities across the southern states. This step did more than shift responsibility; it created a shared framework for managing power flows and laid the groundwork for a single balancing authority across the expanded region. Training sessions, simulations, and technical build-outs accelerated, with operators and utilities working side by side to prepare for the moment when market operations would go live. The transition demanded precision, patience, and collaboration across organizational boundaries.

The final stages of integration required intense focus. Market day simulations began in the South, giving participants the chance to run their systems through real scenarios using MISO's tools. The progress was encouraging, and feedback from local utilities underscored growing confidence that the move into MISO's market would be successful. Soon after, NERC granted MISO approval to serve as the balancing authority for the South region, confirming that the organization had the tools, training, and operational readiness needed to reliably manage the expanded system. Every achievement brought the region one step closer to a unified market footprint stretching from the Gulf of Mexico to Canada.

At midnight on December 19, operators in Carmel and across the South watched as the four-state region formally integrated into MISO's markets. The transition was seamless. Years of planning, training, system development, and partnership had paid off. With the cutover complete, MISO became one of the largest grid operators in the world, overseeing 65,280 miles of transmission and nearly 200,000 megawatts of generation capacity. The expanded footprint brought new diversity, new efficiency, and new responsibility. It marked the beginning of a new era for the region.





Amid all of the integration effort, the broader work of modernizing and strengthening the grid continued. MISO advanced the deployment of synchrophasor technology into real-time operations, offering operators deeper visibility into system behavior. And in December, the Board approved MTEP13, the tenth long-range planning portfolio, reflecting a decade of collaborative investment in a more resilient and efficient transmission system. The portfolio's projects promised economic benefits for years to come while supporting state policies, improving reliability, and enabling the continued integration of new resources.

2013 MILESTONES

- First capacity auction implemented
- Reliability services expanded South
- Market day simulations launched in the South
- MISO certified as South balancing authority
- MTEP13 approved: $1.6B investment
- South Region integrated

By the end of 2013, a broader, more interconnected system had taken shape. The year's work demonstrated not only technical accomplishment but also the collective commitment of utilities, regulators, operators, and stakeholders who believed in the value of a regional approach. What began as a vision of integration became a lived reality, one that would define the region's ability to deliver reliable, cost-effective energy for years to come.

WHY IT MATTERED

Integrating the South Region unified a larger footprint and demonstrated the value of coordinated operations and planning. These achievements reinforced regional reliability at scale, shaping the grid that tomorrow requires.

2014 — Strengthening System Interdependence

Fuel diversity, responsiveness, and momentum

A system evolves when change becomes the discipline guiding its progress.



In the opening months of 2014, the expanded footprint faced industry forces that demanded both steadiness and imagination: evolving environmental rules, tightening reserve signals, and the need for deeper cross-industry coordination.

The expanded footprint entered the year with a sense of renewed purpose. With South Region operations now established, MISO shifted from the excitement of integration to the discipline of delivering value at scale. Leaders emphasized that size alone would not strengthen the region. Coordinated action, shared awareness, and deliberate partnership would.

As that responsibility came into focus, questions about resource adequacy sharpened the region's attention. Analyses revealed tightening margins in the North and Central regions, contrasted with a surplus in the South. The imbalance raised practical questions about how the fleet would adapt to environmental regulations, renewable policies, and shifting fuel economics. Instead of assuming equilibrium, MISO worked with states and stakeholders to refine assumptions and illuminate the complexities behind capacity movement.

Those uncertainties pushed preparedness to the forefront. Lessons from the previous winter's extreme cold had made one truth impossible to ignore: visibility into gas systems was becoming as important as visibility into electric ones. MISO expanded direct communications with pipeline operators, tested new coordination processes, and introduced real-time tools that mapped pipeline conditions to generator connections. These changes reflected a growing realization that reliability depended on understanding not just the grid, but the fuels that powered it.

At the same time, the region looked inward to examine whether its market design was keeping pace with a changing system. Through early market-evolution discussions with stakeholders, MISO explored enhancements aimed at increasing responsiveness as new technologies emerged and system conditions evolved. From storage to demand response, the effort underscored MISO's long-held view: markets thrive when they evolve in step with the grid they serve.

The maturing footprint also demanded deeper regional presence. Breaking ground on the South Region Operations Center in Little Rock signaled MISO's long-term commitment to on-the-ground coordination in the newly integrated territory. The facility would mirror the capabilities of the North Region center, reinforcing that reliability in a footprint this large requires both centralized tools and local expertise.

2014 MILESTONES

- Ground broken on Little Rock operations center
- Gas-electric coordination expanded
- Market improvement studies advanced
- MTEP14 approved: $2.5B investment
- MVP benefits exceeded estimates

Long-range planning carried the same forward-looking energy. MTEP14 introduced 369 transmission projects across the footprint, the first full planning cycle to incorporate the South. A companion review of the 2011 MVP portfolio showed that its benefits were now projected even higher than original estimates, validating years of coordinated investment and strengthening the foundation for future reliability and renewable integration.

As national policy discussions accelerated, so did MISO's engagement with stakeholders on the proposed Clean Power Plan. The organization voiced concerns that interim compliance deadlines could outpace the time required to develop generation, fuel infrastructure, and transmission. The feedback reinforced a consistent theme of the year: progress must move in harmony with what the system can reliably support.

By the end of 2014, the region had balanced operational readiness, market innovation, and long-term planning with a steady hand. The integrated footprint was stronger, more coordinated, and more aware of the challenges ahead. In a year shaped by environmental shifts and growing interdependencies, MISO laid pathways that would guide the region through the next era of change.

WHY IT MATTERED

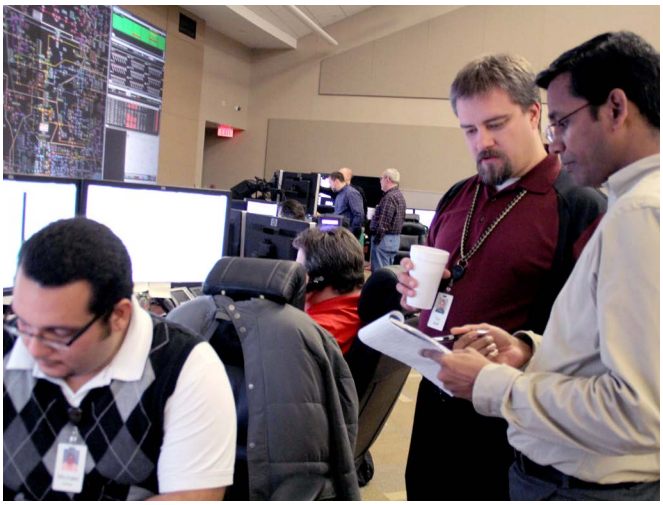
A larger footprint required deeper coordination, enhanced tools, and greater visibility across fuels and markets in 2014. These improvements supported reliability amid rising interdependence, shaping the grid that tomorrow requires.

2015 — Innovating at the Regional Seams

Creativity, adaptation, and cross-boundary alignment

Resilience endures when uncertainty becomes the force sharpening discipline.

The year began with a blend of accomplishment and caution. MISO's expanded footprint had entered its second full year of operation, yet the landscape around it was shifting fast. Environmental regulations, including the Mercury and Air Toxics Standards and the proposed Clean Power Plan, pressed on the generation fleet, driving coal retirements and pushing natural gas and renewables further into the spotlight. Demand growth stayed modest, but the changing resource mix brought new operational challenges that could not be postponed. Rather than wait for clarity, MISO and its stakeholders moved decisively to protect reliability and value across the region.



That determination was reflected in the Market Vision Program, one of the year's most forward-leaning efforts. Through workshops and broad stakeholder engagement, the region articulated a shared view of what a well-functioning market must be: transparent, nondiscriminatory, responsive to technology, and aligned with system reliability. The resulting roadmap offered more than a list of enhancements. It became a guide for how markets would evolve in step with fleet transformation and policy change.

Even as market design advanced, resource adequacy kept the region's attention focused. The Planning Resource Auction confirmed enough capacity for the coming year, but the margin for error was narrowing. Updated OMS-MISO survey results showed near-term improvement thanks to added commitments and slightly lower forecasts. However, the longer view told a different story. By 2020, reserve margins could fall below targets. That reality drove deeper work on transparency, scenario planning, and seasonal readiness as members prepared for peak conditions in both summer heat and winter cold.

Operational conditions underscored why this work mattered. The South Region set an all-time demand record in July, and the broader MISO footprint reached a year-to-date peak that exceeded the prior year by 5,000 MW. Yet the system held steady, operating without the need for emergency procedures. The performance reflected years of preparation, refined communication protocols, readiness drills, and growing coordination across regions. And with the opening of the South Region Operations Center in Little Rock, MISO strengthened its on-the-ground capability to support real-time operations across a vast geography.



Partnership across seams became equally important. A new Operations Reliability Coordination Agreement with SPP and the Joint Parties raised flow limits and improved operational insight across borders. Later in the year, a FERC-filed settlement resolved longstanding questions around capacity usage and compensation, giving market participants clearer expectations and enabling more efficient use of non-firm transmission.

In an increasingly interconnected energy landscape, these agreements reinforced a fundamental truth: reliability improves when neighboring systems move in concert. Planning for the future continued with the approval of MTEP15, a $2.75-billion portfolio of 345 transmission

projects to maintain reliability, improve market efficiency, and support evolving resource needs. It also marked MISO's first competitive transmission project under FERC Order 1000, a milestone in how regional infrastructure could be developed. A focused review of the Multi-Value Project portfolio confirmed that even in a low-gas-price environment, the long-range benefits of coordinated transmission investment remained strong.

2015 MILESTONES

- Market Vision Program launched
- OMS-MISO survey flagged long-term risks
- South Region Operations Center opened
- MISO-SPP reached transmission settlement
- MTEP15 approved: $2.75 billion investment
- Gas-electric planning supported operational resilience

Throughout the year, MISO deepened its understanding of the changing resource fleet. Enhanced gas-electric coordination, improved modeling, and closer engagement with pipeline operators helped operators anticipate fuel delivery constraints and adapt to new operating conditions. The region's growing focus on demand response, distributed resources, and scenario-based planning reflected a broader shift toward flexibility, an attribute that would only grow more important in the years ahead.

By the end of 2015, MISO had met a year of complexity with discipline and progress. Through market innovation, resource adequacy vigilance, regional partnership, and strategic planning, the region strengthened its ability to deliver reliable, least-cost energy across one of the largest interconnected footprints in the world.

WHY IT MATTERED

Record peaks, expanded seam coordination, and new South Region capabilities in 2015 strengthened reliability across a more interconnected grid. These steps reinforced regional resilience, shaping the grid that tomorrow requires.

Era V — A Grid in Motion (2016–2020)

Renewable Growth, Market Modernization, and Expanding System Complexity

Era V marked a period when change moved through the center of the system. Renewable growth, once gradual, accelerated and reshaped the region's operating rhythm. Wind development expanded quickly, placing new pressures on planning and markets and prompting studies, tools, and transmission strategies that helped MISO understand how a more variable fleet would behave. Adaptation soon became reinvention as operators and planners learned to manage a grid characterized by continuous movement rather than predictability.

Complexity grew alongside transformation. Tightening reserves, shifting economics, and emerging technologies placed new demands on markets and operations. Discussions across the footprint focused on resource availability, flexibility, and visibility. Market modernization advanced to support faster intervals and evolving products, while planning took on greater urgency as congestion, changing load patterns, and rising interconnection requests revealed the scale of future investment needs.

During these years, the organization strengthened its capabilities. Leadership expanded and analytical and strategic functions matured. Collaboration with states, utilities, and neighboring systems deepened as seasonal readiness, weather response, and emergency coordination became daily disciplines. The integration of distributed energy resources, storage technologies, and new customer driven participation broadened the operational landscape and encouraged more connected decision making.

The final year of the era tested everything that had been built. A global pandemic disrupted normal operations, and historic storms struck the South Region with force. Through vigilance and coordination, the system held steady. By 2020, MISO had become an organization shaped by transformation and prepared to guide the region through the operational challenges that the next era would require.

2016 – Riding the Winds of Change

Acceleration, transition, and rising opportunity

A system shifts when rising forces teach it to move with greater purpose.

By the end of 2015, the rise of wind across the Midwest was no longer a future scenario. It was the new center of gravity. In less than a decade, wind had grown from a marginal resource into a defining feature of the generation fleet. It forced MISO to evolve how it planned, operated, and understood the grid. What began as an aspiration had become a lived operational reality, one that demanded new disciplines and set the tone for the decade ahead.



The journey had started years earlier, when shifting state and federal policies signaled that cleaner energy would reshape the industry. MISO recognized that transmission planning needed to change with it. In 2005, renewable accessibility became part of MISO's formal planning mandate, the first step in a long transition. The response was swift. Wind development surged, and by 2008 the interconnection queue was overwhelmed with new proposals. The system had never seen growth at this scale.

Instead of slowing the transition, MISO redesigned it. The 2008 queue reform created a clearer, more disciplined process that allowed viable projects to advance while giving developers the transparency they needed. It was an early signal of MISO's emerging role not just as an operator, but as an architect of a new renewable landscape.

As wind expanded, fundamental questions arose. How would the system move large quantities of generation from wind-rich regions to population centers? How would operations adapt when variable resources began to dominate the fleet? Those answers emerged through foundational studies such as the Regional Generation Outlet Study and the Eastern Wind Integration Transmission Study, as well as tools such as the Renewable Energy Gateway, which helped developers navigate this rapidly changing environment.

A DECADE OF WIND MILESTONES

2005: Expansion planning supports renewable growth

2006: Wind capacity passes one gigawatt

2007: Real-time wind monitoring begins

2008: Queue reform

2010: MVP framework enables renewable build-out

2011: Wind resources enter real-time market

2015: Wind-related market enhancements go live

A major turning point came in 2010, when FERC approved the Multi-Value Project portfolio. With it, the region gained a cost-allocation framework capable of supporting the transmission backbone that renewable growth required. The MVP portfolio opened the door to broad regional build-outs and unlocked billions in long-term economic value.

Operationally, integration took another leap when Dispatchable Intermittent Resources allowed wind to follow price signals rather than rely on curtailment. Wind shifted from being managed around to being fully integrated into market operations. By 2012, it was producing significant regional benefits, and later reviews confirmed its essential role in meeting renewable standards and reducing emissions. The integration of MISO South added even greater resource diversity, expanding the renewable canvas beyond wind alone.

Across a decade of growth, MISO had helped transform the Midwest into one of the world's most efficiently integrated renewable regions. What began as policy compliance evolved into a competitive advantage powered by planning foresight and operational creativity. And by the mid-2010s, the scale of this transformation was unmistakable. The stage was set for 2016, a year when the system learned not just to integrate change, but to operate within it.

WHY IT MATTERED

A decade of wind growth reached operational significance in 2016, highlighting new reliability pressures and the need for planning aligned with rising renewable penetration. These signals clarified future system requirements, shaping the grid that tomorrow requires.

2016 — A System Finding New Balance

Evolution, maturity, and recalibration

Change begins when certainty gives way to possibility.



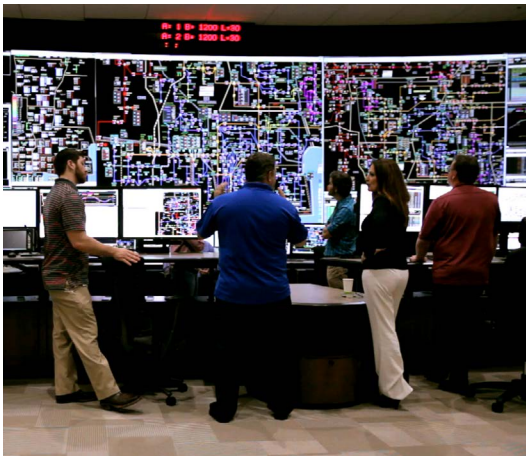
By 2016, the familiar weight of the grid had begun to settle differently. Retirements were rising, certainty was thinning, and the long-trusted balance between resources and demand no longer felt assured. What had once been a system anchored in predictability was becoming something more fluid, more variable, and more exposed to the pressures of a transforming industry. Reliability still held, but it required a different kind of vigilance.

The annual resource outlook made the shifting center impossible to ignore. The region could meet the immediate years ahead, yet the horizon beyond grew narrower, shaped by changes happening faster than traditional planning cycles were built to absorb. The grid was moving from an era of abundance into one defined by careful calibration. It was not a crisis, but a growing recognition that yesterday's assumptions no longer guaranteed tomorrow's stability.

As the fleet evolved, so too did the markets that supported it. Conversations across the footprint grew sharper, asking how markets should adapt when the energy landscape beneath them was no longer dominated by firm, dispatchable resources. The questions were not about tweaking rules, but about rethinking the mechanisms that signaled value, scarcity, and investment. The industry was no longer changing at the margins. It was shifting at its core, and markets had to mature to keep pace.

Transmission planning felt this change as well. The region's first competitive project moved forward, a sign that the future of infrastructure would rely on new models of participation and investment. Competitive transmission was becoming part of the evolving fabric of the grid, reflecting a recognition that the challenges ahead would require broader creativity and greater collaboration.

Inside MISO, the organization was reshaping itself alongside the system it served. A new vision, focused on value and reliability, signaled a shift toward a more outward-facing posture, one designed to meet members where their challenges were emerging. The internal move to integrated service lines reflected a similar understanding: the future demanded a more connected organization, one capable of thinking and acting across boundaries. Investments in people, technology, and capability underscored a simple truth: to guide a changing grid, MISO itself had to change.



As MISO sharpened its focus on delivering measurable value to members, its Value Proposition effort had, by 2016, quantified a decade of cumulative net benefits totaling $17.5 billion. This long-term measure of value underscored how coordinated regional transmission operations consistently produced material economic benefits for the region even as the grid itself was rapidly evolving.

Operational preparedness became increasingly important. With the addition of the MISO South region in 2013, MISO focused on preparing for the possibility of hurricanes. The organization convened a Hurricane Readiness Team to identify and address any gaps in current operating plans, working closely with its members in the South region to coordinate on hurricane preparedness and

contingency planning. This effort reflected the growing need for regional coordination and the recognition that extreme weather events could test the system in new ways.

Amid tightening conditions, the year offered glimpses of what the next era would bring. Late in the year, the region's first large-scale solar resource entered MISO's markets. It appeared quietly but symbolically, representing the widening spectrum of resources shaping the fleet. It was a sign that the grid of the future would not simply be an updated version of the grid of the past. It would be different in character, in fuel, and in the way it responded to the world around it.

2016 MILESTONES

- First competitive transmission RFP
- Solar integrated into markets
- SERC reliability award received
- MTEP16 approved: $2.7B investment
- $17.5B in member benefits created over past decade

By the end of 2016, the center of gravity within the grid had shifted. It was no longer held in place by the familiar patterns of traditional resources, nor by the pacing of historic investment cycles. It was beginning to move toward a future defined by variability, innovation, and the need for stronger connective tissue between planning, markets, and operations.

WHY IT MATTERED

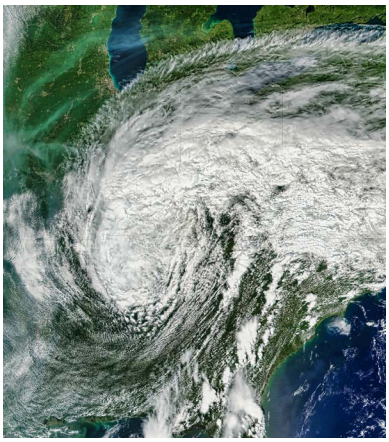
In 2016, the region recognized that transformation had already arrived. Emerging variability and tightening conditions signaled the need for a more flexible, forward-looking reliability framework, shaping the grid that tomorrow requires.

2017 — Progress Accelerated by Pressure

Leadership, advancement, and outward strength

Growth follows when pressure reveals new strengths.

In 2017, the forces surrounding the grid grew louder and more insistent. Challenges arrived in steady succession, revealing patterns that could no longer be ignored. Reliability now depended as much on foresight as on experience, and progress emerged not from isolated efforts but from how the system learned to move as a whole.



Across the footprint, the rhythm of the year was defined by vigilance. Extreme weather culminated in Hurricane Harvey, a test of the South region's preparedness that demanded rapid coordination and steady communication across members and operators. Winter readiness reinforced the lesson, showing how narrow margins could become under strain. Through drills, workshops, and quiet preparation, the region practiced what reliability would require in the years ahead. Operators were not just maintaining the system, they were rehearsing for the future.

2017 was a year of deepening organizational capability. New executives stepped into roles in finance, cybersecurity, and regional affairs, reflecting the reality that a shifting grid required broader expertise. These leaders strengthened how MISO interpreted risk,

expanded regional relationships, and shaped the foundation for decisions that would guide the decade ahead.

2017 MILESTONES

- New CFO, CISO, and regional executives appointed
- Hurricane Harvey readiness demonstrated
- MISO-PJM Market Efficiency Projects advanced
- MTEP17 approved: $2.6B investment

Planning and markets followed the same accelerating trajectory. The Planning Resource Auction cleared with stability, signaling that near-term needs could be met even as the fleet continued to evolve. The annual MISO-OMS resource adequacy survey projected a stronger five-year outlook, while underscoring that long-term certainty would require continued collaboration. Interregional work advanced as MISO and PJM moved forward with low-cost, high-value projects designed to ease congestion along the seam. These were not symbolic gestures. They were practical responses to real constraints.

The approval of MTEP17 reinforced the scale of investment required for a changing fleet. Hundreds of projects and billions in planned upgrades signaled a system becoming more dynamic and an organization preparing to meet that dynamism with deliberate action.

By the time the year closed, the narrative had become clear. Operational stress, organizational renewal, market adaptation, and transmission expansion were chapters in the same story. In 2017, MISO learned to read the signals of a grid in transition and respond with steadier hands and clearer intent.

WHY IT MATTERED

2017 strengthened the region's ability to anticipate change, prepare for emerging challenges, and adapt as conditions shifted. It demonstrated that reliability in a changing grid comes from alignment of people, systems, and strategy, shaping the grid that tomorrow requires.

2018 — Operating the Grid in Real Time

Speed, responsiveness, and daily resilience

Confidence rises when adaptation becomes second nature.



2018 began with a test of endurance. Severe cold gripped the South region, driving winter peaks and triggering emergency actions that required tight coordination across utilities and operators. MISO returned to normal operations as temperatures moderated, but the experience sharpened awareness of how quickly conditions could shift and how essential real-time responsiveness had become for the entire footprint.

The pace of the industry's transformation continued to quicken. Extreme weather, generation outages, and demand fluctuations reminded operators that reliability now depended on preparation as much as reaction. Workshops, drills, and operational readiness reviews became opportunities to internalize lessons learned and strengthen continuity across regions. Seasonal assessments and readiness planning reaffirmed that resilience was an ongoing discipline.



Markets advanced steadily through this evolving landscape. The year's Planning Resource Auction confirmed that near-term capacity would be sufficient across the region, and the OMS–MISO survey again provided a forward-looking view of supply and demand that helped states and load-serving entities prepare for future needs. These tools offered visibility into emerging risks and enabled members to collaborate intentionally on long-term adequacy.



Far more transformative, however, was the clarity emerging around market modernization. The Market System Enhancement (MSE) program moved from planning to visible execution, laying the groundwork for a next-generation market platform that would be more flexible, more transparent, and more secure. The program began to map the existing system in detail, identify interdependencies, and define the architecture required for a modular, upgradeable platform that could support a rapidly evolving grid. It marked a shift toward anticipating the needs of the future rather than adapting the tools of the past. The MSE effort represented a foundational investment in MISO's long-term ability to deliver reliable and efficient markets in an industry shaped by emerging technologies, new resources, and growing operational complexity.

Other milestones reinforced this evolution. The move to five-minute settlements aligned energy payments with real-time dispatch, improving transparency and encouraging flexibility from market participants. Transmission planning continued its forward momentum, including competitive processes for the Hartburg–Sabine Junction project, which advanced due to its potential to relieve longstanding congestion and enhance regional efficiency. Storage integration also progressed, with tariff changes filed to enable electric storage resources to participate fully in MISO markets in future years. Each of these steps contributed to an increasingly adaptive system.

Throughout the year, industry dialogue grew more focused on resilience, innovation, and the role of emerging technologies. MISO participated directly in these conversations while strengthening its own analytical and strategic capabilities. The annual Value Proposition affirmed the organization's ability to generate regional benefits even in a shifting environment, underscoring the importance of footprint diversity, efficient dispatch, and coordinated planning.

2018 MILESTONES

- Market System Enhancement advanced
- Five-minute settlements launched
- Competitive transmission advanced
- Storage integration tariff filed
- MTEP18 approved: $3.3B investment

By the end of 2018, the grid was accelerating, and MISO was evolving with it, advancing modernization efforts, integrating new resources, refining markets, and practicing resilience in every season.

WHY IT MATTERED

Growing complexity in 2018 underscored the need for improved readiness, modernized market systems, and enhanced transmission planning. These efforts equipped MISO for rising variability, shaping the grid that tomorrow requires.

2019 — Confronting the Three Ds of Change

Disruption, diversity, and deeper collaboration

Complexity demands choices that shape what follows.

2019 opened with a clearer view of how the energy landscape was transforming. The grid was no longer responding to change in occasional bursts. It was operating within change, shaped daily by the combined force of three trends that defined the year: de-marginalization, decentralization, and digitalization. Together, they formed a backdrop in which familiar operating assumptions gave way to a new era of variability, speed, and interdependence.



De-marginalization grew more evident as renewables and efficient gas resources continued expanding across the footprint. With more low-cost resources setting prices, traditional signals for investment and dispatch weakened, raising the importance of flexible capability in every hour. Retirements, shifting economics, and environmental pressures altered the balance of the fleet, and MISO refined its market tools to ensure reliability remained grounded in both availability and agility.

Decentralization accelerated as distributed energy resources expanded across distribution systems and behind customer meters. These resources brought local opportunity but added new layers of variability, shortening the planning horizon and reshaping net demand patterns. MISO turned to regional diversity and enhanced coordination to support these changes, while recognizing that visibility into these resources would become increasingly essential for balancing the system.

Digitalization transformed the information environment. Data from smart devices, sensors, and analytics offered new ways to understand system conditions, while also introducing fresh challenges related to scale, cybersecurity, and data stewardship. The pace of digital adoption heightened the need for tools that could translate information into actionable insights for markets, operations, and planning.

MISO and its stakeholders engaged deeply throughout 2019 to understand how these combined trends affected reliability, planning, and market design. The MISO Forward report captured insights across the footprint, identifying three emerging needs that would anchor future strategy: ensuring resource availability at all hours, enabling flexibility to manage rapid fluctuations, and expanding visibility across transmission, distribution, and customer-driven technologies. These needs formed a new compass for decision-making.

The Market System Enhancement program advanced in this environment, becoming a central mechanism for modernizing market systems to support the evolving grid. Its work to redesign architecture, improve modularity, and prepare software for new products and services aligned directly with the direction revealed by the Three Ds. MISO's integrated roadmap approach linked this modernization effort with long-term planning, helping ensure the system would be ready for the technologies and operating challenges ahead.

As 2019 progressed, the organization's path grew sharper. Changes in resource mix, customer expectations, and technologies underscored the need for new levels of coordination across utilities, states, and market participants. Seasonal readiness efforts, resource adequacy planning, and

2019 MILESTONES

- MISO Forward identified Three Ds
- Market System Enhancement advanced modernization
- Outage reforms advanced
- Integration of Distributed Energy Resources expanded
- MTEP19 approved $4B investment

operational reforms reflected a system adjusting not only to what the grid was, but to what it was becoming. Reliability, flexibility, and visibility were no longer abstract needs. They had become the dimensions of everyday decision-making in an increasingly dynamic environment.

When the year drew to a close, the region stood more aware of what the future required. The Three Ds had become the operating reality, and MISO was learning to navigate them with clearer insight, stronger collaboration, and strategies designed for a grid in motion.

WHY IT MATTERED

The Three Ds, demarginalization, decentralization, and digitalization, defined 2019, clarifying evolving reliability needs. By prioritizing availability, flexibility, and visibility, the region prepared for rapid industry change, shaping the grid that tomorrow requires.

2020 — Meeting Uncertainty with Transformation

Challenge, acceleration, and regional steadiness

Disruption reveals which foundations can endure.



The year 2020 opened quietly, with familiar efforts underway to refine tools, strengthen coordination, and prepare the region for another cycle of operational and market activities. For a brief moment, the year looked like many that came before it. Then, without warning, the familiar rhythm broke. The arrival of the global pandemic reshaped the landscape in a matter of days. What had been routine suddenly required reinvention; what had been predictable became fluid. And what had been steady now demanded resilience of a different kind.

As offices closed and the world shifted into uncertainty, the organization responded with deliberate clarity. Protecting the health and safety of employees and stakeholders became the first priority. Maintaining the reliability of the bulk electric system became the second. Every process, meeting, and decision found a new home in virtual spaces. Collaboration that once depended on proximity adapted to distance. The transition was rapid, but it revealed a capacity for flexibility and purpose that had been strengthening quietly over the previous years of Era V.



While the pandemic altered daily life, the system itself required the same vigilance as always. Seasonal readiness work continued. Operators monitored weather, load, and outage patterns. Planning and market processes moved forward. The annual Planning Resource Auction confirmed that despite tightening margins and a changing fleet, the region still held enough capacity for the coming year. Meanwhile, the record-setting volume of new interconnection requests signaled that the energy transition was not slowing. If anything, it was accelerating.

Summer delivered its own tests. An above-normal hurricane season formed in the Gulf, and soon the South Region found itself confronting a succession of powerful storms. Hurricane

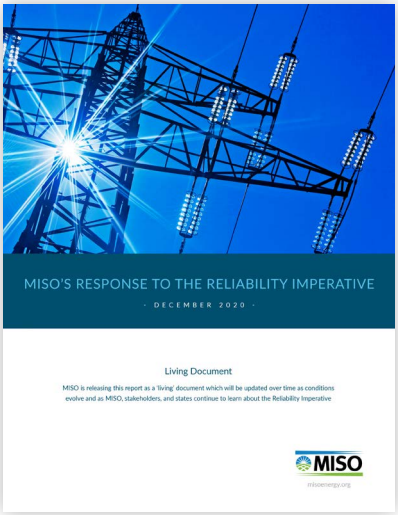
Laura arrived with historic intensity, damaging transmission lines, substations, and customer infrastructure across Louisiana and Texas. The organization activated emergency procedures, coordinated closely with member companies, and adjusted operations to support restoration while preserving wide-area reliability. Weeks later, Hurricane Delta and Hurricane Zeta followed, each bringing fresh complications to a region still rebuilding. The storms stressed the system, but they also highlighted the resolve shared across utilities, operators, and partners who worked tirelessly to restore service.

2020 MILESTONES

- COVID-19 emergency procedures activated
- Duff-Coleman Project energized early
- Record high generation requests
- Reliability maintained through three hurricanes
- MTEP20: $4.2B investment
- Reliability Imperative Report released

Amid these challenges, progress did not pause. The organization launched its first crowd-source innovation challenge, announced the completion of its first competitive transmission project, and deployed a new interconnection queue tool designed to streamline member participation. The MISO Forward 2020 report amplified the voices of Utilities of the Future and highlighted the growing diversity of business models, resource portfolios, and customer expectations across the footprint. Those conversations revealed that the region's needs were changing faster than its tools, and that reliability would require stronger alignment across planning, markets, operations, and technology.

It was in this environment that leadership made public the first Reliability Imperative report, formally articulating a strategic direction MISO had been shaping for years. The report underscored that the accelerating transition to renewables and the rising complexity of system operations demanded an integrated response across four work-streams: Market Redefinition, Long Range Transmission Planning, Operations of the Future, and Market System Enhancements. It called for clearer reliability criteria, improved flexibility across the fleet, better visibility into emerging technologies, and long-term planning that could anticipate a grid increasingly defined by variability.



By the time the year ended, the organization understood that the challenges of 2020 were signals of a new operating reality. The Reliability Imperative captured that understanding and provided a forward path for the years ahead. In a year marked by upheaval, the region strengthened its conviction that reliability, flexibility, and visibility were daily requirements, and that meeting them would define the future of the system.

WHY IT MATTERED

The pandemic and increasing system volatility in 2020 highlighted the need for stronger integration across planning, markets, and operations. The Reliability Imperative formalized a coordinated response, shaping the grid that tomorrow requires.

Era VI — The Reliability Imperative in Motion (2021–2026)

Executing transformation amid market reform, load growth, and unprecedented change

As 2020 ended, it was clear that system conditions had entered a new phase. Reliability was still being maintained, but under patterns that no longer resembled earlier decades. Conventional units were retiring more quickly and performing less predictably. Renewable output shifted with increasingly volatile weather, seasonal risks emerged in unfamiliar ways, and margins tightened across the footprint. These changes signaled that the operating landscape was evolving more rapidly than the tools built to manage it.

The first Reliability Imperative report captured this moment. It recognized that reliability could no longer depend on historical norms and instead required a unified framework across planning, markets, operations, and technology. In the early 2020s, this framework matured into a shared discipline as states, utilities, and stakeholders strengthened reliability criteria, modernized accreditation, and prepared for a fleet defined by greater variability.

As load growth accelerated and weather volatility increased, the Imperative evolved to emphasize clearer metrics, stronger coordination, and practical paths for pacing transmission and generation development. By 2026, it had become part of the region's operating culture, shaping portfolios, market signals, and seasonal preparedness.

Era VI marks the shift from recognizing the challenge to executing the response. Transmission planning advanced from analysis to commitment, producing backbone projects suited to rising electrification and a more diverse resource mix. Market reforms focused on strengthening signals in the hours when reliability was most at risk, and accreditation began to reflect actual performance. Operations enhanced forecasting and situational awareness across all seasons, while digital modernization improved visibility, data quality, and the resilience of core tools.

Through these actions, the Reliability Imperative became daily practice, providing structure and alignment as the region navigated a rapidly changing grid.

2021 - Winter Storm Uri

Lessons from the Edge of Failure

When cold becomes crisis, clarity becomes essential.

In February 2021, Winter Storm Uri swept across the central United States with a severity few anticipated. Temperatures plunged for days, demand rose to record levels, and generation across multiple fuel types faltered. In Texas, the ERCOT system was pushed within minutes of catastrophic collapse as frequency dipped to 59.3 hertz and rotating outages stretched from hours into days. What unfolded was a stark reminder that even the largest and most sophisticated grid operators can be forced to confront the limits of their systems when weather overwhelms expectation.



MISO faced its own extraordinary test. Extreme cold settled over the South Region, driving winter peaks toward levels typically seen only in summer. As generators strained and transmission lines faltered, operators relied on emergency procedures to maintain balance. Conditions worsened on February 15 when local transmission constraints and widespread outages compressed the remaining margin to zero. To protect the integrity of the bulk electric system, MISO ordered controlled, temporary load shedding, initially in Southeast Texas, then more broadly across parts of Arkansas, Louisiana, Mississippi. These interruptions were brief compared to those in Texas, yet they conveyed a clear truth: no region, regardless of its scale or structure, is immune to power interruptions when multiple stressors converge.



Uri also brought into focus the human consequences of grid fragility. Millions across the central United States endured freezing homes, uncertainty, and hardship. The storm made visible how gaps in winterization, communication, and fuel readiness can compound rapidly under extreme conditions, and how operational complexity intensifies when a fleet is both weather dependent and aging.



The lessons were direct and unavoidable. Reliability required anticipating extremes instead of planning to averages. It demanded markets and operational practices that value resources capable of performing in the tightest hours, and transmission investments that reinforce a resilient, flexible system. It called for transparent communication when conditions evolve quickly and for preparation that spans seasons, regions, and technologies.

Uri served as a reminder that the energy transition was unfolding during a period of rising weather volatility. For MISO, it reinforced why the Reliability Imperative was not optional and why vigilance and collaboration remained essential as system conditions grew more variable and more demanding. It also affirmed a deeper truth that guided the years ahead: reliability is not a static achievement, but a discipline renewed every day in anticipation of what comes next.

WHY IT MATTERED

Winter Storm Uri exposed how extreme weather can compress decision windows and stress reliability. Its lessons strengthened preparation for future conditions, shaping the grid that tomorrow requires.

2021 — Awakening to the Scale of Transition

Adapting to fleet change, market reform, and electrification

Urgency and coordination define the path forward.



The year opened with clarity. Transformation was no longer theoretical or distant. It was already reshaping the fleet, the markets that supported it, and the transmission system that bound the region into a single electrical whole. The scale and velocity of change became visible in every corner of the footprint.

Signals of fleet transition appeared throughout the system. Clean energy goals accelerated, retirements of aging thermal units became more certain, and new wind, solar, and storage projects surged into an interconnection queue that reached historic volume. These developments were not episodic. They reflected a structural re-balancing of how the region served load, how energy moved, and how flexibility and stability would need to be supplied. Visibility into future portfolios became essential. The first Regional Resource Assessment offered that view, showing how rapidly the mix could shift and how dependable capacity and flexibility needs were diverging from older patterns. The Renewable Integration Impact Assessment added further insight, demonstrating that renewable penetration beyond thirty percent would reshape planning, operations, and market design in foundational ways.

Electrification added its own rising signal of change. Early shifts in heating and transportation load pointed to new demands on the system. Futures scenarios captured these emerging patterns, projecting stronger winter peaks and more pronounced ramping needs as renewable and electrified demand interacted. These insights pushed planning and operations toward a posture prepared for variability across all seasons and hours, not simply during traditional summer peaks.

One theme stood above the rest. Transmission had become central to navigating the transition reliably. Long Range Transmission Planning (LRTP) aligned around this recognition, offering a forward view of the backbone needed to carry a more diverse, more weather dependent, and more geographically distributed fleet. LRTP created a regional framework capable of addressing constraints, supporting renewable growth, enabling electrification, and preserving flexibility as operating conditions shifted. It also began connecting the work of markets, operations, and planning in a way not previously attempted at this scale. Transmission was becoming strategy, not simply infrastructure.

Extreme cold during Winter Storm Uri underscored this direction. The event revealed how backbone strength and regional transfer capability protected stability under pressure. Uri was not the central story of the year, but it validated the need for transmission readiness and reinforced the path already forming.

2021 MILESTONES

- Winter Storm Uri emergency actions implemented
- Fleet transition pressures surfaced across footprint
- Seasonal accreditation and readiness reforms advanced
- New assessments highlighted emerging reliability risks
- MTEP21 approved: $3B investment

Market modernization continued alongside planning. Accreditation reforms advanced so that resource capability, rather than nameplate values, informed adequacy calculations. Shortage pricing work progressed. Seasonal readiness practices deepened across winter and summer. The region recognized that risk had become year round and that preparation needed to match the pace of transition.

The story of 2021 was not about a single decision or event. It was about a system awakening to the speed of transformation and choosing to move with greater coordination and urgency.

WHY IT MATTERED

Preparation in 2021 accelerated to match transition pace, aligning planning, markets, and operations around emerging reliability needs. These actions reinforced regional readiness, shaping the grid that tomorrow requires.

2022 — Building the Backbone of Transition

Vision, investment, and flexibility for a changing grid



Progress accelerates when planning meets the pace of transformation.

In 2022, MISO reached yet another turning point: after years of assessments, scenario work, and increasingly severe weather events, it became clear that the region's legacy infrastructure could not support a rapidly changing fleet. Reliability needed more than awareness. It needed action. And guiding that action was the evolving Reliability Imperative, still the organization's strategic north star, now expanding in scope and urgency.

The Long Range Transmission Planning effort became the structure through which that vision took form. LRTP was built through extensive technical workshops and stakeholder collaboration, informed by studies such as the Renewable Integration Impact Assessment and the Futures. Its purpose was straightforward: transmission had to evolve ahead of the fleet so energy could move reliably from new production centers to areas of growing demand. Electrification was reshaping consumption patterns, renewable penetration was approaching levels without historical precedent, and flexibility was becoming the defining attribute of reliability.

The Reliability Imperative advanced in parallel, deepening its guidance. The 2022 update accelerated several foundational elements: MISO introduced Seasonal Accredited Capacity to better reflect seasonal performance of resources; launched the Short-Term Reserve product to strengthen operational readiness; deployed emergency pricing reforms; and advanced operator tools, integrated forecasting, and uncertainty modeling. These steps were driven by lessons from Winter Storm Uri and the recognition that electrification and weather volatility were now core reliability factors, not future considerations.



In July of 2022, the MISO Board approved the first LRTP portfolio, Tranche 1, marking a decisive shift from planning to infrastructure commitment. At over ten billion dollars and spanning eighteen high-voltage projects across two thousand miles, it became the most complex regional transmission portfolio

in MISO's history. Its least-regrets design supported wind, solar, storage, and hybrid resources; increased transfer capability; reduced congestion; and strengthened resilience during tight conditions. Forecasted benefits exceeded costs in all zones, energized by avoided local investment, improved access to diverse resources, and better performance during extreme weather.

Tranche 1 also became the foundation for future phases, additional Midwest portfolios, new planning work for MISO South, and efforts to better connect subregions. Transmission requires long lead times, and 2022 demonstrated why planning had to match the pace of transition rather than tradition.

2022 MILESTONES

- Record interconnection queue driven by renewables
- Storage resources entered regional market participation
- Assessment revealed declining accredited capacity trends
- LRTP Tranche 1 approved: $10B investment
- MTEP22 approved: $4B investment

Everywhere, signs of change were visible. The interconnection queue reached historic levels, dominated by renewables and storage. Storage formally entered market participation for the first time. And the 2022 Regional Resource Assessment revealed that accredited capacity was declining even as nameplate capacity grew, underscoring near-term reliability risks and reinforcing why both transmission expansion and market evolution were essential.

The year hinted at what would follow: deeper market redesign, expanded transmission evolution, and system enhancements that would become central in 2023 and beyond. Reliability was no longer something to preserve with legacy tools, it required structural change.

WHY IT MATTERED

Long-range planning became action in 2022 through major transmission approvals that supported renewable growth and evolving reliability needs. These commitments strengthened the region's infrastructure for future conditions, shaping the grid that tomorrow requires.

2023 — Navigating the Complexity of Transition

Attributes, acceleration, and the urgency of reliability

Clarity emerges when risk and innovation converge.

If 2022 was the year when long-range vision turned into infrastructure commitment, 2023 was the year when that momentum met rising complexity. Load growth strengthened, renewable development accelerated, and operating conditions became more variable across seasons and hours. Reliability required faster coordination across planning, markets, and operations as the grid transformed at a pace that exceeded earlier expectations.



In this environment, planning and markets focused on clarifying the capabilities the future fleet would require. The Attributes Roadmap provided needed definition, identifying system adequacy, flexibility, and stability as priority attributes for dependable performance. This work offered a clearer functional view of reliability, informing accreditation improvements and guiding expectations for how both traditional and inverter-based resources would need to perform as operating conditions shifted. The roadmap became a reference point for aligning planning, operations, and market design with the attributes most essential to reliability.

2023 MILESTONES

- Attributes Roadmap defined essential reliability capabilities
- Historic transmission portfolio recommended
- Updated futures reflected faster fleet evolution
- Forecasting and cybersecurity capabilities strengthened
- MTEP23 approved: $9B investment

Transmission needs intensified across the footprint. Local infrastructure pressures grew more pronounced, especially in the MISO South region, where load growth and resource change accelerated beyond earlier forecasts. The 2023 MISO Transmission Expansion Plan recommended nearly nine billion dollars in projects, including the largest Appendix A portfolio ever assembled outside past MVP cycles. These projects reflected a convergence of drivers: reliability needs, age and condition concerns, increasing congestion, and record generator interconnection activity. The year underscored that transmission was becoming a near-term as well as long-range priority.

Planning scenarios were refreshed to capture the direction and velocity of transition more accurately. New modeling illustrated deeper decarbonization trajectories and faster electrification trends, showing how the future fleet might evolve under emerging policy, technology, and market conditions. These updated futures guided LRTP analysis and reinforced the need for infrastructure built to serve a fleet that was changing its shape and behavior more quickly than anticipated.



Digital modernization advanced across operations. Forecasting tools improved, providing deeper probabilistic insight into weather, renewable output, and load conditions. Situational awareness platforms matured, enhancing the data operators relied upon during tight conditions. Cybersecurity capabilities strengthened in response to growing digital and physical threats. These improvements created a more resilient operational foundation, one capable of supporting the increasing complexity of real-time decision-making.

Through these developments, 2023 became the year when the region moved beyond recognizing complexity and began shaping clearer expectations for how the future fleet must perform. The work of the year refined capability, strengthened backbone investments, and improved insight, allowing the system to respond to transition with greater coherence and steadiness.

WHY IT MATTERED

Clearer capability definitions, significant transmission investment, and updated futures in 2023 improved the region's ability to manage rising complexity. These advancements supported reliability in a fast-changing environment, shaping the grid that tomorrow requires.

2024 — Aligning Insight With Execution



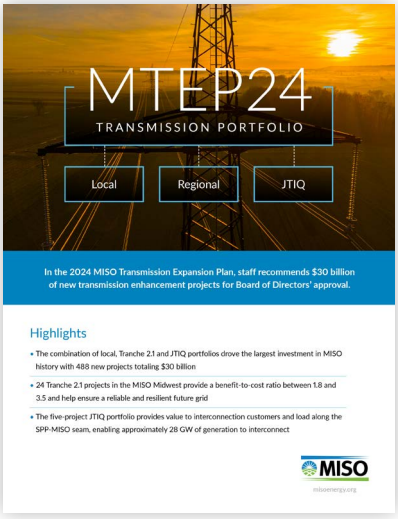
Coordination, measurement, and transmission scale for a changing grid

Clarity deepens when action meets accelerating change.

2024 began with a direct message from CEO John Bear. “We have to face some hard realities. There are immediate and serious challenges to the reliability of our region’s electric grid, and the entire industry, utilities, states and MISO, must work together and move faster to address them.” It was a clear signal that the pace of change had accelerated again.

An update to the Reliability Imperative framed these risks plainly. Scarcity of reliability attributes, more frequent extreme weather, supply chain and permitting delays, large single-site load additions, and shifting investor behavior were reshaping system risk across the footprint. The call to action was not simply to plan carefully, but to accelerate execution.

Transmission became a central expression of that acceleration. Early in the year, MISO shared the initial Tranche 2 proposal, outlining a regional backbone capable of supporting future resource plans and long distance energy transfers. By December, the Board approved the largest transmission portfolio in the country’s history. MTEP24 included local reliability upgrades, a 3,631 mile backbone in Tranche 2.1, and the first Joint Targeted Interconnection Queue projects with SPP. The combined portfolio represented more than 5,000 miles of transmission and provided the foundation for decades of system needs.



Near term indicators reinforced why this level of investment was necessary. The 2024 Planning Resource Auction validated the seasonal resource adequacy construct but also revealed shortages. Capacity margins declined, reflecting retirements and load growth. The OMS-MISO survey depicted an uncertain future where outcomes depended heavily on the timing of new resources and retirements. Large loads such as data centers and manufacturing facilities heightened urgency, requiring stronger alignment among developers, utilities, states, and MISO.

The interconnection queue showed similar pressures. The 2023 cycle, opened in March 2024, included 600 applications totaling 123 GW, almost all of which were wind, solar, storage, or hybrids. FERC approved reforms improved project quality and reduced withdrawals, yet supply chain and permitting delays persisted. These delays underscored the importance of both robust transmission expansion and timely advancement of commercially ready generation.

Resource adequacy continued evolving. In March, MISO filed Tariff changes to modernize accreditation by measuring resources according to their contribution during high risk periods. The method blended probabilistic modeling with observed performance to provide clearer insight for states and utilities. MISO also published a roadmap exploring additional metrics that reflect the magnitude and duration of risk events, complementing the traditional one day in ten years criterion.

Coordination expanded across regions. MISO and PJM launched an interregional transfer capability study to strengthen resilience along their shared seam. Compliance work for FERC Order 881 advanced through ambient adjusted ratings and readiness surveys. Visibility improved as MISO launched new emissions dashboards showing real-time generated emissions and near real-time marginal emissions. These tools provided regulators, operators, and corporate buyers with deeper insight into system conditions.

2024 MILESTONES

- Nation's largest transmission portfolio approved in MTEP24
- Resource auction signaled tightening seasonal margins
- Queue growth surged from renewable project filings
- Accreditation modernization incorporated performance metrics
- MTEP24 approved: $30B investment

Through these combined efforts, 2024 became the year when insight aligned with execution. Long-range planning reached its largest milestone, accreditation and criteria reforms advanced, interregional coordination strengthened, and operational tools improved. The region faced real constraints, but the work of the year strengthened its ability to respond to them.

WHY IT MATTERED

Expanded backbone transmission, refined accreditation, and improved coordination in 2024 strengthened the region's ability to meet rising demand and weather volatility, shaping the grid that tomorrow requires.

2025 — Confronting the New Realities of Growth

Load demand, resource acceleration and evolving operational risk

Reliability strengthens when urgency turns into action.

The reliability landscape shifted markedly in 2025. After years of signals pointing to faster load growth and tightening supply margins, conditions across the footprint converged into immediate, visible challenges. Electrification continued expanding into transportation and buildings. Manufacturing resurgence and a rapid rise in data centers added large, power-dense loads in concentrated locations. Long-term projections showed steep demand growth over the next two decades, reshaping expectations for planning and operations.



Retirements of dependable thermal units and accreditation declines widened the gap between installed and reliable

capacity. The updated Reliability Imperative urged greater coordination among states, utilities and regulators, reinforcing that retirements and new additions must be paced with system needs. Meeting demand would require a balanced mix of renewables, storage, natural gas and emerging technologies, supported by transmission capable of carrying power to where it was needed most.

2025 MILESTONES

- Controlled load shed protected regional grid stability
- ERAS advanced urgently needed resource additions
- Reliability-based demand curve used in annual auction
- Survey highlighted emerging capacity shortfalls
- MTEP25 approved: $12B investment

Transmission remained central. Building on the approval of LRTP Tranche 2.1 in late 2024, MISO advanced competitively selected projects designed to strengthen regional backbone capability, improve transfer limits and support a more diverse fleet. These additions reflected alignment around the need for coordinated, cost-effective infrastructure to sustain reliability in the face of rising demand.

The year also revealed the consequences of limited infrastructure and local vulnerabilities. On May 25, a Transmission System Emergency in Southeast Louisiana required controlled load shed of roughly 600 megawatts to prevent cascading outages and voltage collapse. Extensive generator outages, limited import capability and a damaged 500 kV line created a highly constrained environment. The event underscored the evolving risk landscape, where load pockets, changing weather patterns and higher outage rates interacted with limited transfer capability to produce reliability strain. It also highlighted the need for stronger communication, improved notification protocols and modernized emergency procedures.



To address near-term needs with greater speed, MISO introduced the Expedited Resource Addition Study. ERAS dramatically shortened generator interconnection study timelines for urgently needed capacity. FERC approval created a pathway for up to sixty-eight projects tied to verified load growth or resource adequacy concerns. Forty-seven applications arrived quickly, representing more than 26,500 megawatts of natural gas, solar, wind, storage and nuclear proposals. Cycle 1 and Cycle 2 produced more than eleven gigawatts of planned additions for 2027 and 2028, providing momentum toward strengthening future reliability.

Market and resource adequacy reforms advanced. The 2025 Planning Resource Auction used the Reliability Based Demand Curve for the first time, improving the accuracy of price signals during periods of system risk. While regional capacity remained adequate, summer conditions tightened and dependence on accurate accreditation grew. The OMS-MISO Survey signaled possible deficits as early as 2027 and 2028, emphasizing the need for timely resource additions and sustained coordination.

Operational risk analysis matured into a clearer framework. Long duration outages, shifting net load shapes, stability concerns, forecast exposure and emerging load pockets became focal points for readiness. MISO advanced updates to demand response rules, outage coordination, forecasting capabilities and winter and summer preparedness to meet these realities.

Together, these efforts made 2025 a year when rising demand and tightening supply met an industry prepared to respond. Through ERAS, expanded transmission investment, market refinement and strengthened operations, the region improved its footing for a future in which reliability required both speed and scale.

WHY IT MATTERED

Load growth, accelerated resource needs, and new operational risks in 2025 clarified the urgency of coordinated transmission, generation, and readiness strategies. These actions reinforced reliability under emerging pressures, shaping the grid that tomorrow requires.

2026 — Reliability at the Pace of Demand

Large loads, accelerated resource additions and a modernizing grid

Reliability depends on speed, coordination and foresight.



2026 began with a clear realization: the pace of demand had become the defining force shaping the grid. After years of emerging signals, large loads materialized in ways that were no longer theoretical or distant. Data centers accelerated across multiple states, manufacturing expansions tightened local margins, and electrification continued to reshape daily patterns of consumption. MISO's updated Reliability Imperative captured this new reality plainly, describing a system where risk had become more continuous, more concentrated and more dependent on how quickly planning and operations could adjust.



This growing pressure made resource development an urgent priority. The 2026 OMS-MISO Survey showed states and utilities planning record levels of new accredited capacity, averaging fifteen gigawatts per year for the next five years. Rising uncertainty in load forecasts and more rapid large-load interconnection activity reinforced why immediate and dependable additions were essential. Natural gas, solar, storage and wind formed the backbone of these plans, each contributing differently to the flexibility and adequacy the system required.

As large loads continued to materialize across the region, the need for dependable and timely resource development grew more urgent, and that urgency was reflected in the pace of new additions moving through MISO's interconnection processes. Through the first three quarters of 2026, the Expedited Resource Addition Study became a central tool for meeting near-term adequacy needs. During this period, the ERAS portfolio expanded to more than fifty accepted projects representing nearly 27 gigawatts

across the region. A growing share of these projects was progressing rapidly, with ten reaching completed interconnection agreements and fifteen more nearing completion. As additional resources entered the program and moved through evaluation, activity increased significantly, demonstrating how ERAS was helping commercially ready generation and storage advance toward operation far faster than in prior years. Together, these developments reflected a system increasingly capable of aligning the pace of resource deployment with the pace of rising demand.

2026 MILESTONES

- Large load growth reshaped reliability planning
- ERAS expanded to nearly 27 GW
- Transmission advanced at development speed
- AI and cloud modernization accelerated
- Reliability Imperative matured into action

As resource development intensified, transmission planning and development advanced in parallel. Competitive selections for LRTP Tranche 2.1 projects moved forward, adding clarity to how the region's future backbone would take shape and enabling hundreds of miles of high-voltage infrastructure to progress toward permitting and construction. At the same time, Expedited Project Reviews (EPR) offered members a pathway to study and approve transmission for large loads in roughly ninety days, far faster than traditional annual cycles. This capability became crucial as data centers and other large customers sought connection within compressed timelines. Together, ERAS and EPR formed a new model for aligning generation, load, and transmission at the pace of economic growth.

Operationally, MISO recognized that tighter conditions demanded clearer visibility and more unified real-time coordination. Building on lessons from prior weather events, the organization enhanced machine-learning forecasting tools, refined reserve requirements and modernized emergency procedures. Summer readiness efforts incorporated updated solar profiles, evening ramping analysis and expanded probabilistic insight.

Digital modernization accelerated throughout the year. A new collaboration with Microsoft introduced cloud-native analytics, AI-enabled forecasting and unified data platforms capable of reducing cycle times from weeks to minutes. These tools supported more accurate planning models, faster operational insights and stronger resilience during extreme conditions. The partnership reflected the growing role of digital systems as part of the reliability foundation itself.



Long-term planning evolved as well. The updated Series 2 Futures incorporated higher load forecasts, revised policy constraints and new resource adequacy analysis. These scenarios defined realistic bookends for how the fleet must grow to sustain reliability over two decades, providing structure for future portfolio needs and transmission evolution.

Across all these developments, 2026 became the year when reliability had to match the pace of demand. The region responded to rising pressures by coordinating more closely, moving with greater urgency, and modernizing more deliberately. The Reliability Imperative matured into a framework grounded equally in readiness and action, shaping decisions across planning, operations, markets, and technology.

WHY IT MATTERED

Actions in 2026 strengthened the region's ability to meet rapid load growth, evolving risk and rising operational complexity through faster development, deeper coordination and modernized tools. Shaping the grid that tomorrow requires.

THE NEXT 25 YEARS

Reliability in a Changing World

The future belongs to those prepared to adapt, collaborate, and lead.

Looking back across MISO's evolution, the challenges defining the grid today would have been difficult to imagine in its early years. What began as an effort to coordinate a regional transmission system grew into the management of an increasingly complex energy ecosystem shaped by new technologies, changing resource portfolios, rising demand, and expanding expectations. Through every stage of that transformation, MISO remained guided by a fundamental purpose: serving the region through reliable, coordinated operations.

The grid entering its next chapter will look different from the one that inspired MISO's formation in 1996. New technologies, evolving customer expectations, greater electrification, accelerating economic development, and an increasingly dynamic resource mix will continue to reshape how electricity is planned, transmitted, and managed across the region. Yet the need for reliability remains constant.

Meeting the opportunities of the future will require the same qualities that defined MISO's first quarter century: independence, transparency, innovation, and collaboration. Success will depend on strengthening the connections between planning, markets, and operations; expanding infrastructure at the pace of change; embracing emerging technologies; and maintaining a steadfast focus on the reliability of the bulk electric system.

Most importantly, the future will continue to be shaped by people. The operators monitoring system conditions in real time. The planners preparing for decades of growth. The engineers, analysts, members, regulators, and stakeholders working together to solve increasingly complex challenges. As it has from the beginning, reliability will remain a shared responsibility built on trust, expertise, and partnership.

The story of MISO's first twenty-five years demonstrates what is possible when organizations choose to work together in service of something larger than themselves. The next twenty-five years will bring new challenges and new opportunities, but the mission remains unchanged.

Shaping the Grid That Tomorrow Requires

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