U.S. Municipal Bond Market

Intro to the New Era of AI, Infrastructure & Growth

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Summary

- Generative Artificial Intelligence (GenAI) is still in its early stages, yet it stands at the forefront of a rapidly accelerating wave of technological advancement.
- Future phases may include Artificial General Intelligence (AGI), which mirrors human-level cognitive abilities, and Artificial Superintelligence (ASI), which could surpass human intelligence across all domains.
- The path to AGI is expected to reshape productivity, labor markets, and the broader economic landscape.
- Infrastructure—including energy, water, and digital systems—will be critical in determining which regions are best positioned to capture AI-driven growth.

A New Tech Wave

The ground has shifted. We are entering an age of non-human intelligence, where AI (Artificial Intelligence) technology is accelerating beyond the capacity or willingness of many institutions to adapt. This transformation is already underway, yet countless individuals remain unaware, distracted, or unconvinced of its scale and significance. It will be an evolving journey with both opportunities and challenges, but the overall trajectory promises progress and possibility.

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This is not a conventional technology cycle. It represents a systemic shift with economic implications that could rival or even surpass the Industrial Revolution. The difference lies in speed and scale: the change is unfolding faster and across a broader footprint. Technology has moved from visible tools to invisible systems embedded in daily life. AI does not simply disrupt; it has the potential to redefine civilization, and the pace of this transformation is accelerating in real time.

Timeframe Transition Comparison

Revolution (years)	Main Job Shift	Timeframe for Major Transition	Why That Speed?
Industrial (1750s-1900s)	Farms ➔ Factories	~100+ years	Infrastructure buildout (rail, coal, steel), slow adoption, population growth patterns
Information Age, Computer & Internet (1970-2010s)	Factories ➔ Offices	~30-40 years	Globalized trade, faster tech cycles, mass higher ed, Moore's law
Artificial Intelligence (2020-2040s)	Human cognitive tasks ➔ AI-augmented/AI-run	~10-20 years	Runs on existing digital backbone, self-improving, near instant scalability

Source: HilltopSecurities.

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Institutional and User Adoption

OpenAI launched ChatGPT on Nov. 30, 2022. It hit 1 million users in five days and 100 million in three months—the fastest adoption of any consumer application in history. The latest version, ChatGPT 5.0, introduced a Deep Research Mode, moving beyond text prediction to autonomous research and analysis.

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Generative AI adoption remains limited, giving the impression of slow and modest change. While about 40% of U.S. adults have experimented with GenAI, only 10% use it daily in the workplace. Most companies continue to approach the technology with caution. The GenAI Divide: State of AI in Business 2025, published by MIT NANDA (Networked Agents in Decentralized Architecture), reveals that 95% of enterprise AI pilot programs fail to generate measurable financial returns— a stark indicator that GenAI, while full of promise, remains too immature to consistently deliver enterprise-scale return on investment. For now, its impact is largely confined to boosting individual productivity rather than driving broad profit and loss transformation.

In contrast, the 2025 HilltopSecurities Public Finance Leaders Survey reveals that nearly half of respondents (45%) are already leveraging GenAI. However, some gaps remain here too: 33% report needing more training, and 13% lack access to the necessary tools. These findings highlight that while GenAI adoption is gaining momentum with public finance leaders in government, many professionals are still building their confidence, skills, and access to the tools needed to fully engage with the technology.

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Inflection Point

Eric Schmidt, CEO of Relativity Space and former CEO of Google, argues AI is vastly underhyped. Today's Narrow or "weak" AI, like LLMs (Large Language Models), are rapidly evolving into autonomous agents capable of complex workflows. Schmidt predicts AI could drive 30% annual productivity gains—an unprecedented shift that will redefine business models, labor markets, and economic structures. His advice for workers: adopt AI or risk irrelevance. ***He warns we may be getting to a point where societal adaptation is lagging technological capability***.

Ethan Mollick, author of Co-Intelligence and the One Useful Thing newsletter, offers a powerful guiding principle: ***assume this is the worst AI you will ever use***. That mindset is essential in a world where AI capabilities are expected to advance exponentially, not linearly. The release of ChatGPT 5.0 and its Deep Research Mode—designed for research and analysis—underscores how quickly GenAI is evolving beyond simple tasks into high-value knowledge work.

Mollick reminds us that as AI begins to take on functions once considered uniquely human, we may find ourselves feeling both awe and unease. These systems are evolving beyond traditional tools and becoming increasingly powerful, unfamiliar co-intelligences. By viewing their current limitations as temporary, we give ourselves the opportunity to adapt, remain competitive, and thrive in a business environment that is being steadily transformed by intelligent technologies.

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The Ground Floor: Narrow AI

We are currently in the era of Narrow (or Weak) AI—systems designed for specific tasks without general understanding or consciousness. These GenAI tools can outperform humans in narrow domains such as accounting, advanced games such as chess, image recognition, language generation, and programming. Examples include ChatGPT (OpenAI), Claude (Anthropic), DALL·E (OpenAI, image), and Gemini (Google).

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These models use probability to generate responses, but they do not think. They predict the next word in a sequence based on patterns learned from massive datasets – hence the name Large Language Models (LLMs). This process can appear intelligent because the outputs are often fluent and logical, but there is no self-awareness, understanding, or memory beyond the current or recent interaction. It is mathematics that looks like magic, but it is not a mind.

The Next Stage: Artificial General Intelligence

Artificial General Intelligence (AGI) comprises human-level cognitive abilities across a wide range of tasks. AGI when it is reached could allow AI systems to learn, reason, and adapt without retraining, understand context and nuance, and perform any intellectual task a human can. Its arrival would transform labor markets, business models, and governance. Some experts believe AGI could emerge within the next decade, possibly sooner. Energy and infrastructure remain major constraints, but the global race to achieve AGI is accelerating.

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Beyond Human Limits: Artificial Superintelligence

The final stage is Artificial Superintelligence (ASI)—this would be a system that surpasses human intelligence across every domain, from science and strategy to creativity and ethics. ASI would not just match human reasoning; it would operate at speeds and scales beyond comprehension, solving problems we cannot even define today. Its decision-making could reshape civilization, economies, and geopolitics in ways that make previous technological revolutions look trivial.

ASI introduces existential questions. Once a system can self-improve without human oversight, its capabilities could grow explosively, creating a power imbalance between humanity and machine intelligence. This is the point where control, alignment, and governance become not just technical challenges but matters of survival. The leap from AGI to ASI may be the most consequential transition in human history—and it could happen faster than anyone expects—maybe a decade or two.

U.S. Public Finance at the Front Line of the Future of AI

AI's rapid growth demands enormous computing power and energy capacity as a result. Eric Schmidt estimates that the United States will need an additional 90+ gigawatts of additional energy, roughly equivalent to building 90+ nuclear power plants to support the transition needed to reach ASI. Physical infrastructure – energy production facilities, water, and data centers – may determine which regions capture AI-driven growth and which fall behind. For more, see Brookings: Mapping the AI Economy. In this context, government leadership, along with strategic partnerships where appropriate, appears essential to unlocking the full potential of AI.

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Entire sectors such as accounting, programming, finance, healthcare, education, and manufacturing may need to be fundamentally reimagined. Knowledge work and the professionals who provide it will be significantly impacted as AI takes on tasks once thought to require uniquely human judgment. Governance, legal and ethical frameworks will become critical to ensure responsible deployment and to manage systemic risks. Organizations that harness AI effectively will unlock exponential efficiencies, potentially create entirely new markets, and redefine competitive advantage. This is not just incremental growth. It could be the foundation for a global economic expansion unlike anything in modern history.

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Nations and companies that lead in AI will shape the next century of prosperity. From accelerating medical discovery to optimizing energy grids and reinventing supply chains, the potential for wealth creation is staggering. But this transformation will not distribute benefits evenly. Economic power will concentrate where AI adoption is fastest ***and infrastructure strongest***. The question is no longer ***if*** AI will reshape the economy—but ***who*** will seize the opportunity, and who will be ***left behind***.

Schmidt calls AI "one of the most important developments in the next 500 to 1,000 years." Today's systems remain "narrow," but their expected evolution is the capacity to reason, plan, and execute complex workflows with minimal human input.

U.S. state and local governments—and the public finance system that support them—will be the proving ground for this transformation. AI-driven growth will redefine regional, state, and local economies, tax bases, and infrastructure priorities. Cities that invest in energy capacity, digital infrastructure, and workforce retraining will position themselves as hubs for innovation and capital inflows. Those that fall behind risk fiscal stress and declining competitiveness. Public finance will play a pivotal role in determining whether AI becomes a driver of shared prosperity or a catalyst for regional divergence. The decisions made today will shape the economic resilience of communities for decades to come.

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