

DYNAMIC LOCAL TIME (DLT)

A Modern, Healthier Alternative to Daylight Saving Time



Policy Brief — December 2025

Executive Summary

For more than a century, the United States has relied on Daylight Saving Time (DST) to extend evening light in summer. Yet the semiannual one-hour clock changes continue to cause widespread disruption, negative health impacts, public confusion, and political gridlock. Major polls show strong public interest in ending DST clock changes, but no consensus on whether the nation should adopt permanent Standard Time or permanent Daylight Time.

Dynamic Local Time (**DLT**) offers a practical, technology-enabled alternative. Instead of abrupt one-hour jumps in March and November, **DLT** gradually shifts local time by approximately 20 seconds per day, producing the same seasonal daylight distribution as DST, without abrupt transitions, health risks, or operational disruption.

DLT modernizes timekeeping for the digital age, aligns better with human circadian biology, and provides a nationally consistent standard that maintains both winter-morning safety and summer-evening usability, without imposing the health and logistical burdens inherent to the DST jump.

The Problem: An Outdated Binary Choice

Public Health and Safety Consequences

Peer-reviewed studies have repeatedly demonstrated that the spring-forward transition is associated with:

- Increased motor vehicle crashes
- Higher rates of workplace injuries
- Short-term spikes in cardiovascular events
- Sleep loss and circadian misalignment
- Elevated mood and cognitive impairment

“Health impacts of DST transitions are well documented in peer-reviewed sleep and cardiovascular research.”

These impacts disproportionately affect shift workers, children, and people with existing health vulnerabilities.

Operational and Economic Challenges

The one-hour jump introduces systemic complications:

- Reduced productivity
- Disruptions to transportation schedules
- Disagreement among states and regions
- Disrupted scheduling for transportation and logistics
- Reduced productivity during transition weeks

These costs persist despite broad agreement that the DST transitions are obsolete.

Political Gridlock

Current options force a zero-sum choice:

- **Permanent Standard Time:** better for winter mornings and public health
- **Permanent Daylight Time:** preferred for economic and recreational activity

States like Arizona already opt out of DST entirely, increasing fragmentation. Congress has strong pressure to act, but no consensus alternative.

The Case for Dynamic Local Time

What DLT Is

Dynamic Local Time replaces DST's abrupt, unhealthy jump with a smooth, continuous adjustment that matches the solar year's natural progression.

- Each day, clocks shift by a tiny, imperceptible amount, (e.g. 20 seconds, but the precise daily adjustment is a flexible design parameter, not a fixed constant, and could be tuned based on scientific guidance, seasonal latitude effects, or future research).
- Adds one hour between December and June; Returns that hour between June and December. Even the ingrained time shift of one hour can be adjusted upward or down based on the above factors.
- No abrupt transitions — the system is effectively invisible.
- Fully automatic through network time servers.

What DLT Solves

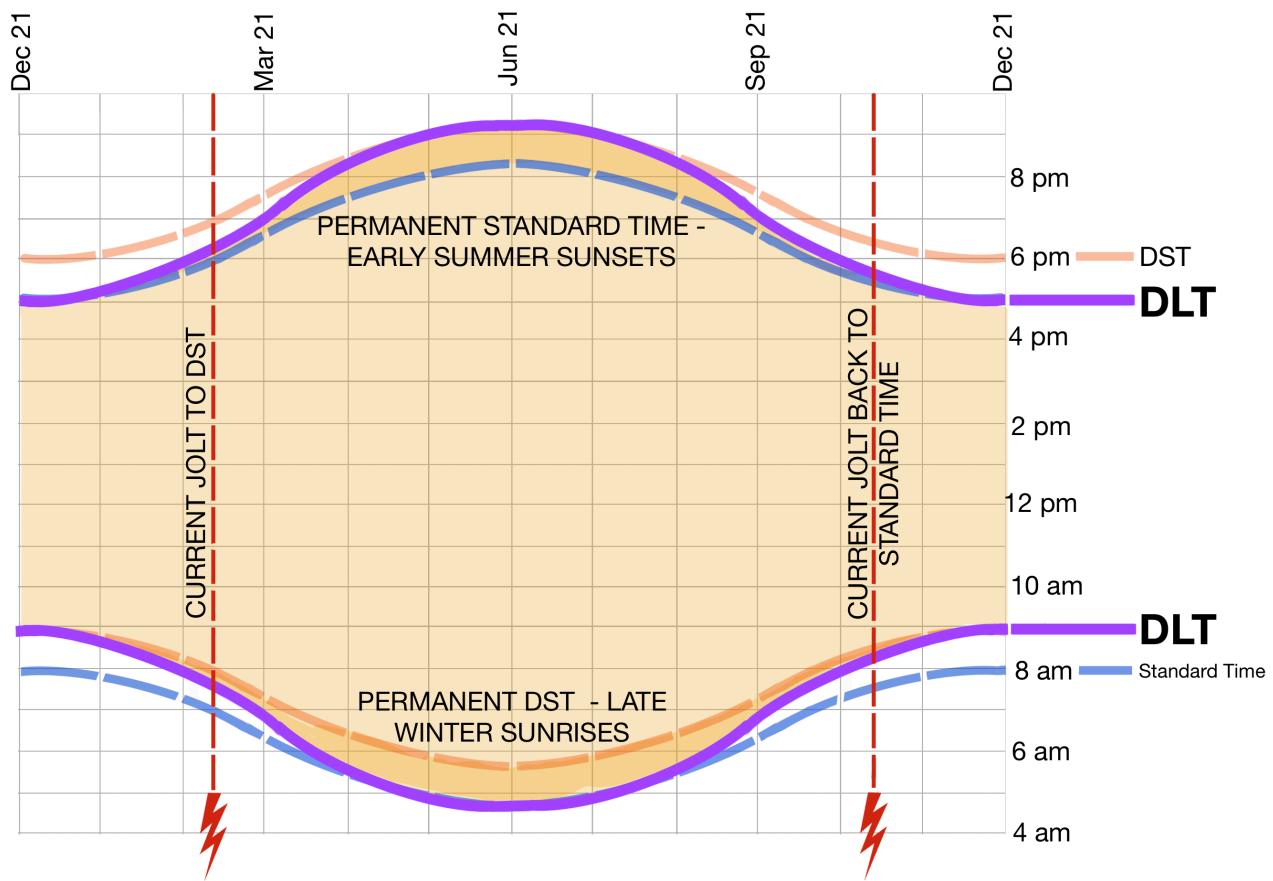
DLT preserves the most widely valued benefits of DST:

- longer summer evenings
- earlier winter sunrise
- improved quality of life during peak daylight seasons

But it eliminates the primary downside: the one-hour shock.

Better Alignment With Human Biology

Circadian experts emphasize that gradual shifts are far less disruptive than sudden ones. Incremental daily changes are virtually imperceptible to the human body, aligning better with natural light cues.



DLT Curve compared to DST and Standard Time — Sunrise / Sunset Times

Implementation: Why It's Feasible Today

The Digital Infrastructure Already Exists

Most timekeeping today is done not by mechanical clocks but by connected devices:

- smartphones
- computers
- tablets
- smart TVs
- GPS systems
- connected cars
- IoT devices

Our phones already know what time it is!

All of these already update automatically from atomic-clock-based internet time servers (NTP) and GPS timing systems. A small software-level change to the standard offset would propagate seamlessly

A Certified Time Intermediary Model— An implementation layer, not a new time authority

Dynamic Local Time does not require replacing standard time, nor does it require immediate statutory change. Instead, it can be implemented through a certified intermediary layer that translates Coordinated Universal Time (UTC), as maintained by national and international standards bodies, into a gradually shifting local time optimized for human circadian alignment. In this model, atomic clocks and standard timekeeping remain authoritative, while Dynamic Local Time functions as a derived, human-facing representation.

A certified time intermediary could be operated by qualified public-interest or private-sector organizations under clear governance and transparency requirements. These intermediaries would be responsible for maintaining the annual adjustment curve, ensuring consistency across devices and services, and coordinating with operating systems, telecommunications networks, and public infrastructure providers. This approach mirrors existing arrangements in other critical domains, where privately operated entities deliver standardized public services without altering the underlying authority of national standards

By introducing Dynamic Local Time through a certified intermediary model, policymakers gain an incremental and non-disruptive pathway for adoption. DLT can coexist with existing legal definitions of time, operate transparently alongside standard timekeeping, and evolve through evidence-based governance. This approach allows public understanding and institutional alignment to mature without requiring immediate statutory replacement of current time practices.

Standardization Through Federal Policy

Congress would authorize **DLT** as the national replacement for DST. A designated federal authority, in coordination with NIST, DOT, and relevant standards bodies (IETF, IEEE), would:

- define the daily time-offset schedule
- publish it in coordination with time servers
- notify software and device manufacturers
- allow a multi-year phase-in for legacy devices

This mirrors similar transitions such as leap seconds, time zone adjustments, or GPS week rollovers.

Handling “Dumb” Clocks

Low-tech clocks and older cars would continue to display time manually set by users, just as they do during today’s DST transitions. Each year’s cumulative shift (one hour total) would be clearly communicated, reducing confusion over time.

Over time, manufacturers would follow suit by adopting DLT-compatible firmware.

**Clocks already drift naturally; DLT
simply formalizes and
synchronizes the process.**

National Consistency and Global Competitiveness

Why States Would Align

Current fragmentation exists because both permanent DST and permanent Standard Time create regional disadvantages. **DLT**, however:

- removes the abrupt changes
- preserves the winter morning light
- preserves the summer evening light

There is no “losing” region. When a system benefits all stakeholders, uniform adoption becomes easier.

International Implications

Just as DST spread globally in the 20th century, a modernized, health-aligned standard is likely to attract international interest.

Global alignment around a smoother system improves:

- trade coordination
- transportation scheduling
- digital system synchronization
- international corporate operations

DLT positions the U.S. as a leader in modern timekeeping reform.

Implementation Pathways

Legislative Adoption

Congress could adopt **DLT** as a replacement for DST by:

- Amending the Uniform Time Act
- Establishing **DLT** as the national standard
- Tasking a federal timekeeping authority (e.g., NIST, in coordination with DOT and standards bodies) with publishing the daily offset schedule
- Coordinating rollout with device manufacturers and transport agencies

This is less disruptive than the 2007 DST modification.

Technological Integration

Device and platform support would include:

- OS updates for iOS, Android, Windows, macOS
- Firmware updates for cars and appliances
- Simple manufacturer guidance (e.g., “read the daily **DLT** offset”)
- Integration with existing timezone databases (IANA, NIST, GPS)

DLT requires far less complexity than adding or removing a timezone.

Public Communication Strategy

Messaging focuses on:

- No more time changes
- Healthier mornings
- Brighter evenings
- Zero disruption
- Clocks that adjust invisibly
- Better alignment with natural daylight

Because **DLT** introduces no daily behavioral change, public acceptance is expected to be high.

Conclusion

The United States is ready to retire the century-old practice of abrupt clock changes. The public wants change, yet permanent DST or permanent Standard Time both create new problems. **Dynamic Local Time** provides a balanced, technologically realistic, health-aligned alternative.

With a gradual, digital-era approach, **DLT** harmonizes human biology, public preference, and modern infrastructure, without forcing abrupt disruptions or regional divisions.

- The tools already exist.
- The benefits are clear.
- It's time to modernize time itself.

**DLT is a 21st-century time
system for a 21st-century
society.**

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