# DRAFT

# FOR APPROVAL

# UNIFORM AUTOMATED OPERATION OF VEHICLES ACT

# NATIONAL CONFERENCE OF COMMISSIONERS

# ON UNIFORM STATE LAWS

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July 1, 2019

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### UNIFORM AUTOMATED OPERATION OF VEHICLES ACT

#### **Prefatory Note**

- 3 The Automated Operation of Vehicles Act addresses a narrow but foundational set of the many
- 4 legal and policy issues raised by automated driving. It is intended to explicitly accommodate and
- 5 specifically regulate what it refers to as the automated operation of automated vehicles.
- 6 Colloquially, these vehicles may also be described as autonomous, driverless, or self-driving.
- 7 Under at least some circumstances, they can steer, brake, accelerate, and signal by themselves
- 8 while monitoring the road so that a human driver need not do so.
- 9 This act covers the deployment of these automated vehicles on roads held open to the public. It
- 10 does not cover testing of aspirational automated vehicles for the purposes of research and
- 11 development, which is the primary focus of most state automated driving laws. It does not cover
- 12 remote driving, in which a human drives a vehicle while outside of or far from it. And it does not
- 13 cover vehicle features that merely assist a human driver; even if these features brake, steer, and
- 14 accelerate, they are still designed with the expectation that a human driver will monitor the road.
- 15 What the act does cover is still vast, for automated driving encompasses a wide range of
- 16 technologies, applications of those technologies, business models for those applications, and
- 17 participants in those business models. See Bryant Walker Smith, How Governments Can
- 18 Promote Automated Driving, 47 N.M. L. Rev. 99 (2017), newlypossible.org.
- 19 For example, a vehicle capable of automated operation may or may not be designed for all roads,
- 20 communities, and travel conditions; be capable of automated operation for an entire trip; include
- 21 a traditional steering wheel, throttle, and brake pedal; need a human who can resume driving
- 22 when requested to do so; need this human to be physically present in the vehicle; rely on a
- 23 human located far from the vehicle to provide instructions and information; use specific sensor
- 24 technologies, including camera, radar, lidar, sonar, inertial motion, and GPS; use highly detailed
- 25 maps that are created in advance; communicate electronically with other vehicles; be originally
- 26 manufactured as an automated vehicle; be retrofitted by a developer other than the vehicle
- 27 manufacturer; be modified by third parties without the involvement of that developer; be sold to
- individual consumers; be deployed only as part of a fleet; carry passengers, deliver goods,
- 29 provide services, or perform novel functions; and so on.
- 30 In other words, because there could be so many different forms of automated driving, picturing
- 31 and attempting to legislate for the singular "driverless car" can be both impractical and
- 32 counterproductive. Instead, it is more helpful to identify and explore assumptions in
- 33 contemporary legal rules as well as in contemporary discussions of automated driving. This act is
- 34 a product of this collective exploration.
- 35 The act accordingly attempts to reconcile automated driving with a typical state motor vehicle
- 36 code. For this reason, in some ways the structure of the draft mirrors such a code: Many of its
- 37 sections—including definitions, driver licensing, vehicle registration, equipment, and rules of the
- 38 road—correspond to, refer to, and can be incorporated into some existing sections of a typical
- 39 vehicle code. However, because existing codes vary widely in both substance and structure, the
- 40 work of carefully codifying this act is left to each state that adopts it.

- 1 One key aspect of this act—automated driving providers—is not part of a traditional vehicle
- 2 code but has parallels in how some states have approached automated vehicle testing, see, e.g.,
- 3 Cal. Veh. Code 38750; Ohio Executive Order 2018-04K, and in how both the National Transport
- 4 Commission of Australia and the Law Commission of England and Wales envision automated
- 5 vehicle deployment, see NTC Australia, Changing driving laws to support automated vehicles,
- 6 ntc.gov.au/current-projects/changing-driving-laws-to-support-automated-vehicles ("automated
- 7 driving system entity"); Law Commission, Automated Vehicles: A joint preliminary consultation
- 8 paper, lawcom.gov.uk/project/automated-vehicles (same).
- 9 Under the Automated Operation of Vehicles Act, a qualified entity declares to the state that it
- 10 will act as the legal driver for certain automated vehicles. This entity—termed an automated
- driving provider—might be an automated driving system developer, a vehicle manufacturer, a
- 12 component supplier, a data provider, a fleet operator, an insurer, an affiliated firm, or another
- 13 kind of market participant that has yet to emerge. The automated driving provider is primarily
- 14 defined not by a specific role in the stream of commerce but, rather, by a willingness to self-
- 15 identify and an ability to meet the technical and legal requirements specified in the act.
- 16 The act uses the motor vehicle registration framework that already exists in states—and that
- 17 already applies to both conventional and automated vehicles—to encourage automated driving
- 18 providers to self-identify. Existing law generally requires the registration of a motor vehicle that
- 19 is operated on a public road, and the vehicle's owner or lessee typically obtains this registration.
- 20 Under this act, however, an owner or lessee may register an automated vehicle only if an
- 21 automated driving provider has designated that vehicle as an associated automated vehicle. If the
- 22 automated vehicle is not "associated" in this way with an automated driving provider, then it
- 23 may not be registered and therefore may not be operated on public roads.
- 24 By harnessing an existing framework, the act seeks to respect and empower state motor vehicle
- 25 agencies. Among other functions, such an agency typically licenses drivers and registers motor
- 26 vehicles. Under this act, the agency does not register an automated driving provider in the same
- 27 way that it licenses a traditional human driver. But the agency does ensure that every automated
- 28 vehicle that it registers will have a legal driver—the automated driving provider—that meets
- basic requirements. The agency has the flexibility to adapt this process to its existing registration
- 30 procedures and the authority to intervene decisively when the credibility of an automated driving
- 31 provider or the roadworthiness of an automated vehicle is in doubt.
- 32 The act's registration-centered approach is also intended to complement both current and
- 33 potential federal motor vehicle legislative and regulatory law. The federal government plays an
- 34 important role—but not an exclusive role—in regulating the design of motor vehicles, federal
- 35 law preempts incompatible state design standards, and bills in the 2017-18 Congress would have
- ambiguously expanded this federal preemption, see H.R.3388 (115th Congress); S.1885 (115th
- 37 Congress). However, states are—and even under these bills would remain—largely responsible
- 38 for ensuring that individual noncommercial vehicles are appropriately identified, maintained, and
- 39 operated. States accordingly play critical roles in motor vehicle safety.
- 40 This act is likewise about safety—encouraging the responsible deployment of automated
- 41 vehicles in a way that seeks to balance concerns about the current safety of conventional driving
- 42 with concerns about the potential safety of automated driving. As existing automated driving

- laws and policies demonstrate, states approach this balancing act in different ways. The Automated Operation of Vehicles Act draws from and builds on these approaches.

#### **UNIFORM AUTOMATED OPERATION OF VEHICLES ACT**

Legislative Note: This act should be codified into the state's vehicle code or the equivalent law of the state according to state practice. This codification could involve amending provisions of the state's vehicle code, inserting provisions within the state's vehicle code, or adding new sections to the state's vehicle code. The act should be codified so that, in relation to automated vehicles, it supplements, modifies, and clarifies but does not wholly displace generally applies the state vehicle law.

7 *applicable state vehicle law.* 

#### 8

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#### Comment

9 As stated in the legislative note, the Automated Operation of Vehicles Act is intended to

10 supplement, modify, and clarify—but not wholly displace—generally applicable state motor

11 vehicle law. This law, which is referred to in this act as the "vehicle code," typically addresses

12 vehicle titling, vehicle registration, driver licensing, rules of the road, and similar topics.

13 However, states are not consistent in the substance of the structure of their vehicle law. For

14 example, many states use the term "vehicle code" to refer to motor vehicle law generally (as

15 does this act), but others use the term to refer to only a subset of this law, and others do not use

16 the term at all. The Uniform Vehicle Code and Model Traffic Ordinance, last published in 2000

by an organization that is now defunct, is as helpful in illustrating divergence as commonality.

18 It is against this backdrop that some states have enacted legislation specific to automated driving.

19 This legislation has been codified in various ways, including as a standalone chapter, see, e.g.,

20 NRS Chapter 482A, as new sections within the state's vehicle code or its equivalent, see, e.g.,

21 Cal. Veh. Code div. 16.6, as new provisions within existing sections of the state's vehicle code,

see, e.g., M.C.L.A. 257.36, and as amendments to existing provisions of the state's vehicle code,

23 see, e.g., T.C.A. § 55-8-101. Some states have taken multiple approaches. Compare, e.g., Col.

24 Rev. Stat. Ann. § 42-1-102 with § 42-4-110 with § 42-4-242.

25 Regardless of how this legislation has been codified, state motor vehicle law still generally

applies with respect to automated driving. In some cases, legislation expressly excludes the

application of specified provisions of the state's vehicle code, see, e.g., Fla. Stat. Ann. § 316.305,

28 expressly excludes the application of unspecified inconsistent provisions, see, e.g., Col. Revised

29 Stat. Ann. § 42-4-242, or would seem to implicitly exclude the application of inconsistent

30 provisions, see, e.g., Cal. Vehicle Code § 38755. In no case, however, does legislation wholly or

31 even largely remove automated driving from the state's vehicle code.

32 This act takes a similar approach. Early in the process, the Committee considered whether to (1)

33 create a new legal framework for automated vehicles to wholly supplant existing vehicle codes,

34 (2) adopt a model vehicle code applicable to all motor vehicles and then amend it to explicitly

35 address automated vehicles, or (3) draft a hybrid act to map an existing vehicle code onto

36 automated vehicles. After determining the first two options to be impractical if not undesirable,

the Committee concluded that only a hybrid act could effectively address the complexity and

38 diversity of existing motor vehicle law.

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#### SECTION 1. SHORT TITLE. This [act] may be cited as the Uniform Automated

2 Operation of Vehicles Act.

#### 3

#### Comment

4 This act uses the term "automated vehicle" to describe a motor vehicle that can—under at least

5 some circumstances—steer, brake, and accelerate by itself while monitoring the road so that the

human driver need not do so. This definition excludes a vehicle that has only a driver assistance
 system, because such a system is designed with the expectation that a human driver will still

8 monitor the road even as the system steers, brakes, and accelerates. A vehicle is an automated

9 vehicle even if it is not currently under "automated operation"—that is, even if a human driver

10 rather than the vehicle itself is currently steering, braking, accelerating, or simply monitoring the

11 road.

12 This ambiguity is one of the reasons why the leading definitional document for automated

13 driving, SAE J3016 (2018), eschews the term "automated vehicle" in favor of lengthier and more

14 specific alternatives. See SAE J3016 (2018), sae.org/standards/content/j3016\_201806. However,

15 the U.S. National Highway Traffic Safety Administration, many U.S. states, and even the United

16 Nations use "automated vehicle" or a similar term. See, e.g., US Department of Transportation,

17 Automated Vehicles 3.0, transportation.gov/AV; Global Forum for Road Traffic Safety (WP.1)

18 resolution on the deployment of highly and fully automated vehicles in road traffic,

19 unece.org/fileadmin/DAM/trans/doc/2018/wp1/ECE-TRANS-WP1-165e.pdf. Accordingly, this

20 act likewise refers to automated vehicles as well as to the automated driving systems equipped

21 on these vehicles and to the automated operation of these vehicles. These terms and others are

22 explained in the next section.

The act's titular reference to "vehicles" rather than to "driving" does not exclude the latter, just
as state vehicles codes can address not only vehicles but also driving and drivers.

- 25 **SECTION 2. DEFINITIONS.** In this [act]:
- 26 (1) "Associated automated vehicle" means an automated vehicle that an automated
- 27 driving provider designates pursuant to Section 7.
- 28 (2) "Automated driving provider" means a person that makes a declaration to [the
- 29 relevant state agency] under Section 6.
- 30 (3) "Automated driving system" means the hardware and software collectively capable of
- 31 performing the entire dynamic driving task on a sustained basis.
- 32 (4) "Automated operation" means the performance of the entire dynamic driving task by
- 33 an automated driving system. Automated operation begins upon the performance of the entire

1 dynamic driving task by the automated driving system and continues until a human driver or 2 human operator other than the automated driving provider terminates the automated operation. 3 (5) "Automated vehicle" means a motor vehicle with an automated driving system. 4 (6) "Completely automated trip" means travel in an automated vehicle that, from the 5 point of departure until the point of arrival, is under automated operation by means of an 6 automated driving system designed to achieve a minimal risk condition. 7 (7) "Dedicated automated vehicle" means an automated vehicle designed for exclusively 8 automated operation when used for transportation on a [road open to the public]. 9 (8) "Drive" has the meaning in [the state's vehicle code], except that an automated 10 driving provider exclusively drives an associated automated vehicle under automated operation. 11 (9) "Driver" has the meaning in [the state's vehicle code], except that an automated 12 driving provider is the exclusive driver of an associated automated vehicle under automated 13 operation. 14 (10) "Dynamic driving task" means all of the real-time operational and tactical functions 15 required to operate a vehicle in on-road traffic, including controlling lateral and longitudinal 16 vehicle motion, monitoring the driving environment, executing responses to objects and events, 17 planning vehicle maneuvers, and enhancing vehicle conspicuity. The term does not include the 18 strategic functions of driving, including scheduling trips, selecting destinations, and specifying 19 routes. 20 (11) "Minimal risk condition" means a condition to which a vehicle user or an automated 21 driving system may bring a vehicle to reduce the risk of a crash when a trip cannot or should not

22 be completed.

23

(12) "Operate" has the meaning in [the state's vehicle code], except that an automated

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1 driving provider exclusively operates an associated automated vehicle under automated

2 operation.

3 (13) "Operator" has the meaning in [the state's vehicle code], except that an automated

4 driving provider is the exclusive operator of an associated automated vehicle under automated

5 operation.

6 (14) "Person" has the meaning in [the state's vehicle code] [means an individual, estate,

7 business or nonprofit entity, public corporation, government or governmental subdivision,

- 8 agency, or instrumentality, or other legal entity].
- 9 *Legislative Note:*

10 If the state merges this act with the state's vehicle code, these definitions should be codified in 11 the general definitions.

12 The "relevant state agency" referred to in paragraph (2) may be a department or division of

13 motor vehicles or another state agency responsible for the registration of motor vehicles or the 14 licensing of drivers.

15 States use a variety of terms to describe a "road open to the public" as used in paragraph (7),

16 including road, roadway, and highway. This term may also encompass some privately or

17 publicly operated parking facilities. If the state consistently uses a term to refer to such a road, it

- 18 should be used here.
- 19 The phrase "the state's vehicle code" as used in paragraphs (8), (9), (12), (13), and (14) refers
- 20 to a state's laws on, inter alia, the licensing of drivers and the titling, registration, and operation
- 21 of motor vehicles. These laws are generally statutory but may be regulatory. They generally
- 22 include and are broader than the rules of the road.
- 23 Paragraphs (8), (9), (12), and (13) provide definitions for terms that may already be used in

state vehicle law and, if so, may or may not already be defined statutorily. If a term is not used in

25 statute or case law, it may be omitted, although a state may wish to retain all four terms to

26 reduce future interpretive ambiguity and increase interstate consistency. If a term is already

27 *defined statutorily, that definition may be amended directly rather than by reference.* 

- 28 In paragraph (14), the second bracketed definition for "person" should be used only if the term
- 29 is not already defined statutorily for the purpose of state vehicle law or is defined statutorily to

30 *mean only a natural person.* 

31

# Comment

32 Although the 14 terms defined in this section are best understood in context, some points of

- 1 introduction and clarification may be helpful.
- 2 First, consistent with the practice of the U.S. National Highway Traffic Safety Administration
- 3 and several U.S. states, this section adapts some terms and definitions from the leading
- 4 definitional document for automated driving, SAE J3016 (2018),
- 5 sae.org/standards/content/j3016\_201806. In particular, paragraphs (3), (7), (10), (11), and (13)
- 6 borrow from SAE J3016 but incorporate changes for legal or functional clarity. These are
- 7 essential definitions, and J3016 may be helpful in their interpretation. For example, as J3016
- 8 explains, an "automated driving system" is defined by its asserted capabilities rather than by its
- 9 successful realization of those capabilities: An automated driving system that fails is still an
- 10 automated driving system. Consistent with J3016, an automated driving system or automated
- 11 driving provider might also perform "strategic functions of driving" even though these functions
- 12 are not part of the "dynamic driving task." As in J3016, the definition of "minimal risk
- 13 condition" is necessarily open; it is often illustrated by a vehicle parked on the shoulder with its
- 14 hazard signals activated, but circumstances may demand more or less.
- 15 Second, this section references some terms that may already be used in state motor vehicle law,
- 16 including those in paragraphs (8), (9), (12), and (13). These terms are used inconsistently across
- 17 and even within states. See generally Bryant Walker Smith, Automated Vehicles Are Probably
- 18 Legal in the United States, 1 Tex. A&M L. Rev. 411, 463-74 (2014), newlypossible.org. Because
- 19 interpretation of these terms can have dramatic consequences under state vehicle law—even if
- 20 they are not defined statutorily—these paragraphs clarify the definitions in the context of
- 21 automated driving without disrupting the more general definitions.
- 22 Third, the "automated driving provider" concept referenced in paragraph (2) is foundational to
- 23 the Automated Operation of Vehicles Act. As explained in the comments accompanying sections
- 5 through 7, this act permits the ordinary registration of an automated vehicle only if some
- 25 qualified entity vouches for that vehicle by designating it as an "associated automated vehicle."
- 26 This entity may be the same as or different than the entity that registers the vehicle. For example,
- the developer of an automated driving system might be the automated driving provider for an
- 28 automated vehicle that is owned and accordingly registered by an individual consumer. The
- definitions of automated driving provider and associated automated vehicle should also be read
- 30 in conjunction with subsection 3(e), which contemplates interstate comity.
- 31 Fourth, under paragraph (4), "automated operation" can be terminated only by a human driver or
- 32 human operator. This natural person initiates this termination through a command or other
- 33 deliberate act that is inconsistent with the continued performance of the entire dynamic driving
- task by the automated driving system. This means that a vehicle with an automated driving
- 35 system that has stopped functioning—whether by or despite its design—can still be under
- 36 automated operation for the purposes of this act even if it is not under automated operation in a
- technical sense. Remote driving is outside the scope of this act, but this definition does
- 38 contemplate that in some scenarios a remote human driver—even one who is working as an
- 39 agent of the automated driving provider—might terminate automated operation. And, upon the
- successful completion of a trip, a vehicle may no longer have any operator because it is no longer
   being operated. As a technical and conceptual matter, a transition from automated driving can be
- being operated. As a technical and conceptual matter, a transition from automated driving can be
   complex, and this definition does not explicitly address certain edge cases that are left to the
- 42 complex, and this definition does not explicitly address certain edge cases that are left to the 43 courts for development. For example, if a human reasonably terminates automated operation to

avoid a risk of imminent harm proximately caused by the automated driving systems, then
 automated operation may be deemed to continue until the risk is avoided, realized, or enhanced.

Fifth, several definitions contain other nuances that may not be immediately obvious. A vehicle equipped with an automated driving system is considered an "automated vehicle" under paragraph (5) regardless of whether the vehicle is under automated operation. A vehicle is still a "dedicated automated vehicle" under paragraph (7) even if it can or must be driven by a human in certain terminal situations such as those involving maintenance, storage, inspection, and postincident removal.

9

#### SECTION 3. APPLICATION; CONSTRUCTION; GOVERNING LAW.

- 10 (a) This [act] applies to the ownership, registration, and operation of an automated 11 vehicle, even if the ownership, registration, and operation of the vehicle complied with laws 12 other than this [act] before [the effective date of this [act]]. 13 (b) Except as otherwise provided in this [act], [the state's vehicle code] applies with 14 respect to an automated vehicle. 15 (c) [The state's vehicle code] must be interpreted to facilitate the development and 16 deployment of automated vehicles in a way that maintains or improves traffic safety. 17 [(d) The [relevant state agency or agencies] may [make rules, issue interpretations, and 18 take other actions to] administer and enforce this [act].] 19 (e) If the applicable law of a jurisdiction other than this state is substantially similar to 20 this [act], then with respect to an automated vehicle that is registered in that jurisdiction: 21 (1) an automated driving provider in that jurisdiction is an automated driving 22 provider under this [act]; and
- 23 (2) an associated automated vehicle in that jurisdiction is an associated automated
  24 vehicle under this [act].
- 25 (f) This [act] does not preclude remedies under law other than this [act].
- 26 Legislative Note:
- 27 If the state merges this act with the state's vehicle code, these provisions should be codified in a

9

1 *new section on automated driving generally.* 

2 Subsection (b) clarifies that state vehicle law, including, inter alia, rules for vehicle ownership,

registration, insurance, and operation, still applies with respect to automated vehicles. This act
should be codified accordingly.

5 The agencies in subsection (d) may include those responsible for registration of motor vehicles, 6 licensing of drivers, and enforcement of rules of the road, among others. Because this subsection 7 is intended to confer the kind of authority that the adopting state typically confers on its agencies

8 to administer its statutes, the subsection may be omitted or modified if it is unnecessary or

9 *inconsistent with state practice.* 

14

- 10 In adopting this act, a state may wish to identify, review, and consider modifying or repealing 11 prior legislation that specifically addresses automated driving.
- 12 The state should adhere to its requirements and conventions for codifying violations and
- 13 *punishments to ensure that they are legally enforceable.*

### Comment

- 15 The Automated Operation of Vehicles Act is intended to clarify, modify, and supplement—but
- 16 not replace—a state's existing vehicle code in relation to automated vehicles.
- 17 Accordingly, this section clarifies that the state's vehicle code continues to apply with respect to
- 18 automated vehicles. For example, an automated vehicle must still be insured in accordance with
- 19 the state's requirements for vehicle insurance. Other legal provisions—such as rules for
- 20 commercial passenger services—may also apply even if they are not in the state's vehicle code.
- 21 These are just two examples of the many legal and policy topics that fall outside the scope of this
- 22 act and that may be appropriate for further study by states.
- 23 At the same time, this section clarifies that the state's vehicle code must be interpreted in a way
- 24 that is not necessarily inconsistent with automated operation of automated vehicles. This act
- 25 specifically addresses provisions common to many vehicle codes, such as a prohibition on
- 26 unattended vehicles, that might otherwise be construed in a way that is incompatible with
- 27 automated driving. However, the general instruction of subsection (c) (as well as its companions
- 28 in later sections of this act) is intended to account for unique aspects of a state's law that may not
- be specifically addressed by this act and that may not be identified in conjunction with the state's
- 30 adoption of this act.
- 31 This section also explicitly empowers relevant state agencies to administer and enforce this act.
- 32 As in other sections of this act, this authorization is intended to give these agencies the authority
- and flexibility to effectively address unexpected developments in automated driving. If a state
- 34 determines that this authorization is unnecessary, duplicative, or undesirable, it may adapt or
- 35 omit subsection (d).
- 36 The interstate nature of motor vehicle travel motivates subsection (e). An automated vehicle
- 37 under automated operation in state X might be lawfully registered in state Y. If state Y has also
- 38 adopted this act, then the driver of the vehicle in both states is the automated driving provider

1 that has made a declaration in state Y. (These states may therefore wish to develop a process to

- 2 share this information.) However, if state Y has not adopted this act, then the vehicle is not an
- 3 associated automated vehicle and does not have an automated driving provider in either state. In
- 4 that case, state X identifies the driver(s) or operator(s) using the general definitions of drive,
- 5 driver, operate, and operator that it has developed over decades. Because these definitions tend to
- 6 be written and interpreted broadly, see Bryant Walker Smith, Automated Vehicles Are Probably
- Legal in the United States, 1 Tex. A&M L. Rev. 411, 463-74 (2014), newlypossible.org, many
  natural or legal persons—an occupant, the owner, the manufacturer—might be subject to
- 9 enforcement action. By adopting this act, a state could accordingly provide more certainty for its
- 10 residents when they or their automated vehicles travel out of state.
- 11 Finally, as the legislative note recognizes, many states have already enacted legislation explicitly
- 12 addressing automated driving. In some of these states, the legislation relates exclusively or
- 13 primarily to testing for the purposes of research and development, which is not specifically
- 14 addressed by this act. In others, the legislation may address or implicate topics within the scope
- 15 of this act. For example, some states have defined the driver or operator of an automated vehicle
- 16 in a way that may be inconsistent with this act's treatment of that question. In such a case, the
- 17 state may wish to clarify the status of this prior legislation in conjunction with its adoption of this 18 act.
- 19 SECTION 4. DRIVER LICENSING.
- 20 (a) An individual is not required to hold a [driving license] to take a completely
- 21 automated trip.
- 22 (b) An automated driving provider is not required to hold a [driving license] to drive or
- 23 operate an automated vehicle under automated operation.

# 24 Legislative Note:

If the state merges this act with the state's vehicle code, these provisions should be codified in
the driver licensing section.

- 27 The particular term used by the state should be substituted for "driving license" in this section.
- 28

# Comment

- 29 Under existing state law, an individual who drives generally needs to hold a valid driving
- 30 license. Conversely, an individual who does not drive generally does not need to hold such a
- 31 license. The Automated Operation of Vehicles Act does not change these existing rules.
- 32 However, its definitions of drive, driver, operate, and operator do remove automated driving
- 33 from this existing framework.
- 34 This section clarifies that an individual who takes a completely automated trip (in which an
- 35 automated driving system capable of achieving a minimal risk condition performs the dynamic

1 driving task from the beginning through the end of the trip) does not need a driving license, even

2 if the individual sits in the conventional driving position, turns on the vehicle, or performs other

3 actions that may constitute driving in more conventional contexts. Conversely, because a state's

4 existing vehicle code continues to apply, an individual who drives for part of a trip does need a

5 driving license, even if the individual relies on an automated driving system for part of the trip.

6 This act does not define a trip, which is generally understood to be a journey from an origin to a

7 destination. The driveway of a house, the curb outside an office building, and a space in a

8 parking garage are possible destinations. A freeway shoulder generally is not. This means that,

9 for example, an automated vehicle capable of automated operation only on freeways needs a

10 licensed driver, because pulling off to the side of the road before the freeway ends does not

11 complete the trip. However, an automated vehicle does not need a licensed driver solely because

12 its automated driving system achieves a minimal risk condition in response to a hardware failure,

13 a severe blizzard, or another condition that unforeseeably delays the trip's completion.

14 Finally, even though an automated driving provider is the driver of an automated vehicle under

15 automated operation for the purpose of the state's vehicle code, the provider is not required to

16 hold a conventional license. However, the state may investigate and decline to recognize an

17 automated driving provider under Section 6 (and may decline to register associated automated

vehicles under Section 5). Individually or in concert, states may also wish to develop a system to

19 track and sanction automated driving providers that is comparable to the one for human drivers.

- 20 SECTION 5. VEHICLE REGISTRATION.
- 21 (a) The [owner] of an automated vehicle shall comply with [the state's requirements for
- 22 registration of motor vehicles].

23 (b) If a motor vehicle that is not registered as an automated vehicle becomes an

24 automated vehicle, the [owner] shall obtain a new registration for the vehicle before automated

25 operation and in accordance with the requirements for an automated vehicle.

26 (c) At registration of a motor vehicle, the [owner] shall indicate to [the relevant state

agency] whether the vehicle is an automated vehicle. This indication does not bind [the relevant

- 28 state agency] to register the vehicle as an automated vehicle.
- 29 (d) [The relevant state agency] may grant, maintain, or renew the registration of an
- 30 automated vehicle only if an automated driving provider designates the vehicle under Section 6

31 as an associated automated vehicle.

32 (e) [The relevant state agency] may decline, suspend, revoke, or decline to renew the

registration of an automated vehicle that is not an associated automated vehicle, not associated
 with an automated driving provider recognized by [the relevant state agency], not properly

3 maintained, not insured in accordance with applicable law, not compliant with a registration

- 4 requirement, or otherwise not fit to be operated.
- 5 (f) If [the relevant state agency] declines, suspends, revokes, or declines to renew the
- 6 registration of an automated vehicle, [the relevant state agency] may grant a temporary
- 7 registration that applies to the vehicle only when it is not under automated operation.
- 8 (g) [The relevant state agency] may grant, maintain, or renew the registration of a motor

9 vehicle that is no longer an automated vehicle only if the registrant represents under penalty of

10 perjury to [the relevant state agency] that the vehicle cannot and will not be used under

11 automated operation on a [road open to the public].

- 12 (h) Registration of an automated vehicle does not create a presumption as to the safety of
- 13 the vehicle or its equipment.

# 14 *Legislative Note:*

15 If the state merges this act with the state's vehicle code, these provisions should be codified in 16 the vehicle registration section.

17 This section applies to all persons that are required to register a vehicle under state law. If the

18 state requires or allows a motor vehicle to be registered by a person other than the owner of the

19 vehicle (such as the lessee of the vehicle), references to "owner" should be modified

20 accordingly. Existing rules for determining whether a motor vehicle must be registered in the

21 state also apply to automated vehicles.

22 The state may wish to modify language in this section to be consistent with existing usage of the

23 term "registration," which, depending on the state, could refer either to a request by a person to

- 24 register a vehicle or to the issuance of that registration by the relevant state agency.
- 25 The state may wish to compare and reconcile the language in subsection (e) with similar
- 26 *language already used in the state's vehicle code.*

# 27 Comment

28 Sections 5, 6, and 7 of the Automated Operation of Vehicles Act complementary each other and

- 1 a state's generally applicable rules for motor vehicle registration.
- 2 Under existing law, the owner (or lessee) of a motor vehicle must generally register that vehicle
- 3 with a state in accordance with that state's place of registration rules. This act retains this same
- 4 obligation for the owner (or lessee) of an automated vehicle, who must likewise register the
- 5 vehicle with the state.
- 6 This act also adds a new condition of registration: Under Section 5, an automated vehicle may be
- 7 registered only if an entity has both declared itself to be an automated driving provider under
- 8 Section 6 and designated the particular automated vehicle as one of its associated automated
- 9 vehicles under Section 7. The vehicle owner and the automated driving provider may or may not
- 10 be the same legal person. As long as the automated vehicle is associated with an automated
- driving provider recognized by the state motor vehicle agency, its owner (which may or may not
- 12 be the same person) may register it just as that person would register a conventional motor
- 13 vehicle.
- 14 If, however, an automated vehicle is not—or is no longer—associated with an automated driving
- 15 provider, then the owner may not register it and therefore may not use it on public roads. This
- 16 significant restriction under Section 5 incentivizes entities to act as automated driving providers
- 17 under Section 6 and to designate associated automated vehicles under Section 7. In short: A
- 18 person is unlikely to buy an automated vehicle that they are not allowed to actually use.
- 19 This act provides some flexibility to the state motor vehicle agency in applying this rule to
- 20 address situations where automated operation is temporarily or permanently imprudent or
- 21 impossible. If the agency suspends the registration of an automated vehicle, it may nonetheless
- 22 authorize the non-automated operation of that vehicle through a temporary license. If the owner
- ensures and represents that automated operation is no longer possible, then the vehicle is no
- 24 longer an automated vehicle and may be registered consistent with generally applicable
- 25 registration requirements.
- Conversely, a motor vehicle might become an automated vehicle through modifications to its hardware or software, in which case the vehicle's owner must obtain a new registration for the vehicle.
- 29 SECTION 6. AUTOMATED DRIVING PROVIDERS.
- 30 (a) To qualify as an automated driving provider, a person must:
- 31 (1) have participated in a substantial manner in the development of an automated
- 32 driving system;
- 33 (2) have submitted to the United States National Highway Traffic Safety
- 34 Administration a safety self-assessment or equivalent report for the automated driving system as
- 35 required or permitted by the United States National Highway Traffic Safety Administration; or

1	(3) be registered as a manufacturer of motor vehicles or motor vehicle equipment
2	under the requirements of the United States National Highway Traffic Safety Administration.
3	(b) A person is an automated driving provider only if the person makes a declaration to
4	[the relevant state agency] that the person is an automated driving provider.
5	(c) To make a declaration under subsection (b), a person must in a form acceptable to [the
6	relevant state agency]:
7	(1) represent under penalty of perjury that the person qualifies as an automated
8	driving provider;
9	(2) represent under penalty of perjury that the person is capable of undertaking the
10	responsibilities of an automated driving provider;
11	(3) represent under penalty of perjury that sufficient evidence demonstrates that
12	the automated driving system of each associated automated vehicle is capable of complying with
13	[the state's rules of the road];
14	(4) irrevocably appoint [the relevant state agency] as a lawful agent for service of
15	process in an action arising from the automated operation of an associated automated vehicle;
16	and
17	(5) pay a fee specified by [the relevant state agency] for processing the automated
18	driving provider declaration.
19	(d) A person that makes a declaration under subsection (b):
20	(1) has the burden of proving its qualifications and representations to the
21	satisfaction of [the relevant state agency];
22	(2) shall submit to an investigation ordered at any time by [the relevant state
23	agency];

1	(3) shall provide all information requested by [the relevant state agency];
2	(4) shall pay the actual costs incurred by [the relevant state agency] in the
3	investigation; and
4	(5) has no vested rights in the recognition of the declaration, which is a privilege.
5	(e) [The relevant state agency] may at any time:
6	(1) decline to recognize a declaration made under subsection (b);
7	(2) delay recognition of a declaration made under subsection (b);
8	(3) rescind recognition of a declaration made under subsection (b); or
9	(4) investigate the qualifications or representations of a person that makes a
10	declaration under subsection (b).
11	Legislative Note:
12 13	If the state integrates this act into the state's vehicle code, these provisions should be codified in a new section on automated driving providers.
14	Comment
15 16	Section 5 of the Automated Operation of Vehicles Act provides that a person may register an automated vehicle only if that vehicle is associated with an automated driving provider. This

17 Section 6 specifies how an entity declares itself to be an automated driving provider. Section 7

18 specifies how that entity then designates an automated vehicle to be an associated automated

19 vehicle.

20 The potential diversity of automated driving compels a flexible definition of automated driving 21 provider. An automated vehicle's automated driving system may be installed by the developer of 22 the system, the manufacturer of the vehicle, or another entity altogether. The vehicle may be 23 owned by a sophisticated technology company, by a fleet operator with some familiarity with 24 automation, or by an individual with no technical knowledge whatsoever. Regardless of 25 ownership, the continued safety of automated operation is likely to require the ongoing 26 involvement of a technically competent entity that facilitates data transfers, software updates, 27 and technical support. The automated driving provider concept recognizes that automated 28 vehicles will be driven not by individuals or even computers but by companies involved in the 29 development and deployment of these vehicles.

30 To become an automated driving provider, an entity must make an affirmative declaration that

31 includes specific representations. This means that, first, an entity does not become an automated

32 driving provider against its will and, second, not every entity can become an automated driving

1 provider. Subsection (a) identifies three basic qualifications, at least one of which a provider

2 must satisfy, and subsection (c) identifies five key requirements, all of which the provider must

- 3 satisfy.
- 4 Among these, the automated driving provider must represent that sufficient evidence
- 5 demonstrates that the automated driving system of each associated automated vehicle is capable
- 6 of complying with the rules of the road. The phrase "sufficient evidence" is intended to provide
- 7 flexibility to those automated driving providers that act in good faith and consequences to those
- 8 providers that act in bad faith. It may be informed by other legal standards of proof and review
- 9 that are familiar to courts and agencies.
- 10 Although the automated driving provider may not need to provide this evidence in its initial
- 11 declaration, the state motor vehicle agency may investigate the entity, may decline to recognize
- 12 the entity's declaration (even if the agency has previously recognized the declaration), and may
- 13 revoke the registrations of associated automated vehicles. (However, the state may still consider
- 14 the entity to be the driver or operator of an associated automated vehicle for the purpose of
- 15 enforcing the rules of the road.) Moreover, other laws may provide a basis for the state to
- 16 prosecute an entity that misrepresents the existence or sufficiency of this evidence.

#### 17

# SECTION 7. ASSOCIATED AUTOMATED VEHICLES.

- 18 (a) An automated vehicle is an associated automated vehicle if and only if an automated
- 19 driving provider designates the automated vehicle under subsection (b).
- 20 (b) To designate an associated automated vehicle, an automated driving provider must
- 21 provide notice in a form acceptable to [the relevant state agency].
- 22 (c) Once designated under subsection (b), an automated vehicle remains an associated
- 23 automated vehicle unless [the relevant state agency] declines, delays, or rescinds recognition of
- 24 the declaration of the automated driving provider, the automated driving provider dissolves, or
- 25 the automated driving provider disassociates the automated vehicle.
- 26 (d) To disassociate an associated automated vehicle, an automated driving provider must
- 27 provide notice in a form acceptable to [the relevant state agency].

#### 28 Legislative Note:

If the state merges this act with the state's vehicle code, these provisions should be codified in a
new section on associated automated vehicles.

#### Comment

2 Section 5 of the Automated Operation of Vehicles Act provides that a person may register an

automated vehicle only if that vehicle is associated with an automated driving provider. Section
6 specifies how an entity declares itself to be an automated driving provider. This Section 7

specifies how that entity declares riser to be an automated univing provider. This section 7
 specifies how that entity then designates an automated vehicle to be an associated automated

6 vehicle.

1

7 An automated driving provider designates its associated automated vehicles by giving acceptable

8 notice to the relevant state motor vehicle agency. The language of subsection (b) was chosen

9 over more precise formulations to provide flexibility to this agency, to avoid financial, technical,

10 or procedural burdens, and to facilitate without requiring cooperation among states and with the

11 federal government. A state might require notice directly from a provider, indirectly through the

12 vehicle registrant, or collectively through a public or private database, among other possibilities.

13 Once an automated driving provider has designated an associated automated vehicle, the

14 association remains until the provider is not recognized by the state agency, ceases to exist under

15 principles of corporate law, or affirmatively withdraws the designation. The language of

16 subsection (d) was chosen to provide flexibility to the relevant state agency. For example, the

17 agency might require the automated driving provider to give advance notice both to the agency

18 and to the owner of the automated vehicle.

19 This comment concludes by reiterating the relationship among motor vehicle registrations

20 (Section 5), associated automated vehicle designations (Section 6), and automated driving

21 provider declarations (Section 7): Existing state law generally requires the registration of a motor

- vehicle that is operated on a public road. If an automated vehicle qualifies as such a motor vehicle, it too must be registered. The person seeking that registration—typically the vehicle
- vehicle, it too must be registered. The person seeking that registration—typically the vehicle owner—must comply with all conditions of registration under existing law. Section 5 of this action
- owner—must comply with all conditions of registration under existing law. Section 5 of this act
   adds a further condition: For the owner of an automated vehicle to register the vehicle, an
- 26 automated driving provider must have designated that vehicle as an associated automated
- 27 vehicle. Section 6 specifies how an entity declares that it is an automated driving provider, and
- 28 Section 7 specifies how that entity then designates its associated automated vehicles. These three
- 29 section 7 specifies now that entry then designates its associated automated vehicles. These three 29 sections work together with existing law to ensure that a properly registered automated vehicle

30 has a legal driver when it is under automated operation. In general, only if an automated vehicle

31 is associated with an automated driving provider may it be registered and operated on public

32 roads.

# 33 SECTION 8. EQUIPMENT.

34

[(a) [The state's vehicle equipment requirements] must be interpreted to facilitate the

- 35 development and deployment of automated vehicles in a way that maintains or improves traffic
- 36 safety.]
- 37

(b) An automated vehicle must be properly maintained. A violation of this subsection is a

1 violation [as specified in the state's vehicle code].

- 2 (c) A provision of [the state's vehicle equipment requirements] requiring equipment that 3 is necessary only for the performance of the dynamic driving task by a human driver or human
- 4 operator does not apply with respect to a dedicated automated vehicle.
- 5 (d) A provision of [the state's vehicle equipment requirements] prohibiting an electronic
- 6 device in a vehicle, other than a device used to evade law enforcement, does not apply with
- 7 respect to a dedicated automated vehicle.
- 8 (e) A provision of [this state's vehicle equipment requirements] prohibiting an electronic
- 9 device in a vehicle, other than a device used to evade law enforcement, may not be enforced with
- 10 respect to an automated vehicle under automated operation.

### 11 Legislative Note:

- 12 Because of subsection 3(c), subsection (a) should be included only if the state's vehicle
- 13 equipment requirements are not codified in the state's vehicle code.
- *If the state merges this act with the state's vehicle code, these provisions should be codified in the section pertaining to the condition of and equipment on vehicles.*
- 16 The state may wish to compare and reconcile the language in subsection (b) with similar
- 17 *language already used in the state's vehicle code.*
- 18 If the state codifies this act by merging it with the state's vehicle code, the existing vehicle code
- 19 provisions addressed in subsections (c), (d), and (e) can be directly amended.

#### 20

# Comment

- 21 Many state vehicle codes include provisions related to the equipment on motor vehicles. Most of
- 22 these provisions primarily contemplate the continued roadworthiness of individual motor
- 23 vehicles rather than the design of new motor vehicles. This Section 8 of the Automated
- 24 Operation of Vehicles Act is intended in part to clarify the application of these provisions to
- automated vehicles. In contrast, the next section is intended in part to clarify the application of
- 26 similar provisions to the operation of these vehicles.
- 27 For example, under this section, a prohibition on the installation of a television screen visible
- from the driver's seat would not apply in the case of a dedicated automated vehicle (i.e., one that
- 29 cannot be operated by a conventional human driver) and would otherwise not apply in the case of
- 30 an automated vehicle under automated operation. Under the next section, a related but distinct

- 1 prohibition on actually using such a screen would not apply during automated operation.
- 2 However, prohibitions on installing and using products intended to evade law enforcement (such
- 3 as radar detectors) would continue to apply.

Subsection (b) requires that an automated vehicle be properly maintained but does not identify the legal subject to which this obligation applies. This passive provision may nonetheless be used to deny or revoke a vehicle's registration, to remove a vehicle from the road, to impound a vehicle, or to cite a driver or operator. The violation language can be adapted for the enacting state, which might identify an appropriate violation provision in its existing law, reference a residual violation provision, or create a new violation provision applicable to automated vehicles.

- 10 SECTION 9. RULES OF THE ROAD.
- 11 [(a) [The state's rules of the road] must be interpreted to facilitate the development and
- 12 deployment of automated vehicles in a way that maintains or improves traffic safety.]
- 13 (b) An automated driving provider shall take reasonable steps to comply with [the state's
- 14 rules of the road] during automated operation of an associated automated vehicle.
- 15 (c) An automated driving provider is responsible for a violation of [the state's rules of the
- 16 road] by an associated automated vehicle under automated operation.
- 17 (d) An automated vehicle may not be operated on a [road open to the public] if the
- 18 vehicle is not properly maintained, not insured in accordance with applicable law, not compliant
- 19 with a registration requirement, or otherwise not fit to be operated.
- 20 (e) A prohibition under [the state's vehicle code] on unattended or abandoned vehicles
- 21 does not apply to an automated vehicle under automated operation solely because an individual
- 22 is not in or near the vehicle, unless the vehicle is not lawfully registered, poses a risk to public
- 23 safety, or unreasonably obstructs other road users.
- [(f) A child, incapacitated person, or pet in an automated vehicle is not considered
  attended solely because the automated vehicle is under automated operation.]
- 26 (g) A restriction under [the state's vehicle code] on the use of an electronic device in a
  27 vehicle, other than a device used to evade law enforcement, does not apply if the automated

- 1 vehicle is under automated operation.
- 2 [(h) A requirement under [the state's vehicle code] that imposes a minimum following
- 3 distance other than a reasonable and prudent distance does not apply to the automated operation
- 4 of an automated vehicle.]
- 5 *Legislative Note:*
- 6 Because of subsection 3(c), subsection (a) should be included only if the state's vehicle 7 equipment requirements are not codified in the state's vehicle code.
- 8 If the state merges this act with the state's vehicle code, these provisions should be codified in 9 the section containing the rules of the road.
- 10 The phrase "the state's rules of the road" refers to state laws on the operation of motor vehicles.
- 11 *These laws, which may be statutory or regulatory, are generally only one part of a vehicle code.*
- 12 The state may wish to compare and reconcile the language in subsection (d) with similar 13 language already used in the state's vehicle code.
- 14 The state may wish to revisit the laws referenced in subsection (f) in light of automated driving.
- 15 If the state codifies this act by merging it with the state's vehicle code, the existing vehicle 16 provisions addressed in subsections (e), (f), (g), and (h) can be directly amended.
- 17 If the state does not specify numerical minimums for following distance or following time,
  18 subsection (h) may be omitted.
- 19

# Comment

- 20 This section of the Automated Operation of Vehicles Act clarifies how a state's rules of the road
- 21 apply in the context of automated driving. With respect to automated driving providers, it
- 22 establishes two important and complementary principles.
- 23 First, an automated driving provider must take reasonable steps to comply with the rules of the
- 24 road during automated operation of an associated automated vehicle. This prospective principle
- 25 requires an automated driving provider to act reasonably rather than to ensure absolute
- 26 compliance with the rules of the road, particularly when absolute compliance may not be
- 27 definable, achievable, or even desirable. It means, for example, that an automated driving
- 28 provider does not necessarily violate the state's vehicle code merely by deploying an automated
- 29 vehicle that is capable of crossing a double-yellow centerline or of momentarily exceeding a
- 30 speed limit in the interest of safety. This is important because some rules of the road as written
- 31 can be contradictory, inconsistent with expected practice, and tempered through enforcement
- 32 discretion. An automated driving provider does not intend to violate these rules merely by
- 33 declining to unequivocally foreclose the possibility of violation.

- 1 Second, notwithstanding the first principle, an automated driving provider is responsible for a
- 2 violation of the rules of the road by an associated automated vehicle under automated operation.
- 3 This retrospective principle merely recognizes that the automated driving provider is the legal
- 4 driver in these circumstances and is therefore subject to corresponding sanctions under the state's
- 5 vehicle code. In other words, the automated driving provider should receive the speeding ticket
- 6 when an associated automated vehicle under automated operation is caught speeding. At the
- 7 same time, this section does not address the appropriate level of enforcement. It is expected that
- federal, state, and local authorities will continue to evaluate the role of various forms of
  automated enforcement (including self-reporting obligations) in improving road traffic safety.
- automated emotechnent (meruding sen-reporting obligations) in improving toad traine safet
- 10 Under this act, all of the rules of the road that apply to the human driver or operator of a
- 11 conventional vehicle also apply to the automated driving provider of an associated automated
- 12 vehicle under automated operation. In contrast, some approaches attempt a more granular
- 13 application of these rules. For example, the Law Commission of England and Wales tentatively
- 14 proposed that certain rules, including those related to roadworthiness, the use of child restraints,
- 15 and post-crash conduct, should apply to a new category of "user-in-charge." See Law
- 16 Commission, Automated Vehicles: A joint preliminary consultation paper,
- 17 lawcom.gov.uk/project/automated-vehicles. This thoughtful approach, however, could
- 18 complicate a clean division between the established obligations of a human driver during
- 19 conventional operation and the equivalent obligations of an automated driving provider during
- 20 automated operation.
- 21 Subsection (d) makes explicit the power of road authorities to remove automated vehicles that
- 22 may pose unreasonable risks to road safety. The language of this subsection is similar to more
- 23 general language already included in the vehicle codes of some states.
- 24 Like the previous section, this section also clarifies how specific rules should be understood in
- 25 the context of automated driving. Under subsection (e), an automated vehicle is not unattended
- 26 or abandoned merely because it is unoccupied. Conversely, under bracketed subsection (f), a
- 27 young child left alone in a vehicle is unattended even though that vehicle is under automated
- 28 operation. However, each state may wish to resolve the policy questions of whether a child,
- 29 incapacitated person, or pet should be able to use an automated vehicle without in-vehicle human
- 30 supervision.
- 31 Finally, this section provides that a numerical minimal following-distance requirement does not
- 32 apply to the automated operation of automated vehicles. However, the common "reasonable and
- 33 prudent" following-distance requirement continues to apply. (Human drivers routinely violate
- 34 both requirements.) This bracketed subsection (h) differs in scope from following-distance
- 35 legislation enacted in some states to facilitate the platooning of vehicles, particularly commercial
- 36 trucks, that use advanced technologies but may not necessarily qualify as automated vehicles.

# 37 SECTION 10. UNIFORMITY OF APPLICATION AND CONSTRUCTION. In

- 38 applying and construing this uniform act, consideration must be given to the need to promote
- 39 uniformity of the law with respect to its subject matter among states that enact it.

#### 1 Legislative Note:

- *If the state merges this act with the general vehicle code, this provision should be codified in a new section on automated driving generally.*
- 4 **[SECTION 11. SEVERABILITY.** If a provision of this [act] or its application to a
- 5 person or circumstance is held invalid, the invalidity does not affect other provisions or
- 6 applications of this [act] which can be given effect without the invalid provision or application,
- 7 and to this end the provisions of this [act] are severable.]

### 8 Legislative Note:

- 9 Include this section only if this state lacks a general severability statute or a decision by the
- 10 highest court of this state stating a general rule of severability.
- 11 If the state merges this act with the state's vehicle code, this provision should be codified in a 12 new section on automated driving generally.
- 13 SECTION 12. EFFECTIVE DATE. This [act] takes effect ....