



# **Luxart Emergency Lighting System V** **User Guide and Reference**

For ELS-V version 1.05

*Then He said, “let there be light”, and there was light.*

# Table of Contents

Getting Started.....	4
Disclaimer .....	4
Introduction .....	4
Credits and Acknowledgements .....	4
Donations.....	5
Operation and Limitations .....	5
Requirements.....	5
Installation .....	5
Important to Prevent Issues.....	5
ELS Configuration Files .....	7
ELS.ini file .....	7
ELS.ini file ADMIN Section.....	7
ELS.ini file CONTROL Section.....	7
Vehicle Configuration Files.....	8
Loading VCFs .....	8
Creating and Editing VCFs .....	8
ELS Control Features .....	9
ELS Information Display Panel .....	9
Keyboard Vs Controller Input.....	10
ELS Key Lock.....	10
AI/NPC Vehicle Support .....	10
Multiplayer.....	10
ELS Lighting Features .....	11
ELS Light Groups .....	11
ELS Lighting Formats .....	11
ELS Lighting Stages.....	12
Preset and Forced Flash Patterns.....	13
Scan Flash Pattern Mode .....	13
Auxiliary Coronas .....	14
Takedowns and Scene Lights .....	15
Steady Burn Lights .....	15
Blackout Mode.....	15
Cruise Lights.....	15

Arrow Board.....	15
Vehicle Damage .....	16
<b>ELS Sound Features.....</b>	<b>17</b>
ELS Siren Overview.....	17
ELS Main Siren.....	17
ELS Main Siren Scan Mode.....	17
ELS Auxiliary Siren .....	17
ELS Horn and Manual Tones .....	18
ELS Siren Modes.....	18
ELS Siren Tones and AI Behavior .....	18
Panic Mode .....	19
AI/NPC Vehicle Sirens .....	19
<b>ELS Vehicle Model Development.....</b>	<b>20</b>
Introduction .....	20
How ELS Works .....	20
Modeling for ELS .....	20
Extra Part Allocation .....	20
Extra Part Mesh Placement.....	21
LOD Coronas and Extra Part Nodes.....	21
Environmental Lighting .....	21
Slicktops .....	21
Unused Extras .....	22
Default Siren Lights .....	22
Model Hierarchy .....	22
Note Regarding LEDS and STRB Secondary Lighting Formats .....	23
Takedowns and Scene Lights .....	23
Arrow Board Modeling.....	23
Adjusting a Vehicle Model for Auxiliary Coronas .....	24
DRO PRML Formats.....	24
<b>Appendix .....</b>	<b>26</b>
ELS Abbreviations.....	26
Audio Strings.....	27
ELS Part Placement .....	28
ELS.ini Options .....	29
Vehicle Configuration File (VCF) Options .....	30

# Getting Started

## Disclaimer

The Luxart Emergency Lighting System (ELS) is freeware and may not be exploited for personal, financial or commercial gain. ELS is provided without any form of warranty. Therefore, responsibility for any damages caused by this product or its misuse rest solely with the user, as the author will accept no liability.

## Introduction

ELS is a modification for the PC platform version of the game Grand Theft Auto V (GTA V) by Rockstar Games. ELS is a “.asi” script modification meant to alter the behavior of the game. Its purpose is to provide emergency lighting and audio effects for vehicle models specifically configured to make use of ELS’s features (pro-ELS models).

## Credits and Acknowledgements

ELS is coded by **Lt.Caine** using the C++ ScriptHook development toolkit for GTA V by Alexander Blade and the powerful AdvancedHook Library System by LMS. The default ELS configuration files, official ELS documentation materials, and the ELS User Guide and Reference are authored by Lt.Caine. Many ELS features are the result of a collaborative effort between Luxart Systems and the G17 Media team. As such, ELS features code contributions from Sam and LMS.

The ELS-V testing team consisted of (in alphabetical order): Albo1125, BxBugs123, GravelRoadCop, PoliceWag, and Prophet.

Thus, thanks to their invaluable contributions to the ELS project, the following people must be acknowledged:

- **LMS:** for his powerful AdvancedHook, the amazing features of which (including vehicle damage enablement) ELS depends upon, in addition to his valued assistance with AdvancedHook, his numerous contributions to the ELS code, and his persistent researching of the GTA V game engine in order to generously develop methods to allow ELS to squeeze out as many features as possible.
- **Sam:** for his valued assistance and contributions to the ELS code, his powerful and professional public relations skills and work on behalf of ELS, as well as his constant desire to lend a helping hand.
- **GravelRoadCop:** for his generous assistance and expert feedback—his keen eye and attention to detail were instrumental in helping to achieve realistic light flashing patterns. His constant suggestions and pushes for innovation were invaluable to the project and are responsible for many of the features contained therein. His public outreach must also be underscored.
- **BxBugs123:** for his dedicated help, feedback, continuous innovation with regard to ELS vehicle models; for providing nearly all ELS testing vehicle models, and for leading the push and providing the feedback for ELS controller support.
- **Albo1125:** for his great, informative videos, specific feedback, and incredible attention to detail.
- **PoliceWag:** for his expert feedback, suggestions, and extremely dedicated help and patience.
- **Prophet:** for his support, feedback and outreach to the public.
- **The ELS users,** who ultimately provide the motivation necessary to take upon such endeavors.

## Donations

ELS is freeware and will always remain so. It has required and continues to demand considerable time and effort to produce and refine. All donations to Luxart, no matter how small, are greatly appreciated and contribute to ELS development. If you would like to support ELS, consider making a donation via [Lt.Caine's official LSPFR profile page](#).

## Operation and Limitations

ELS makes use of the vehicle components available to GTA V vehicle models commonly referred to as “extras”. By toggling these parts on pro-ELS models in various sequences, ELS simulates emergency lighting patterns. Thus, ELS must be used in conjunction with pro-ELS vehicle models. Non-ELS models (or vehicle models not specifically configured to make use of ELS features), such as the default game vehicle models, are to be considered incompatible with ELS.

Due to uncontrollable elements native to the game, ELS is not without its limitations. For instance, though measures have been taken to reduce its impact on performance, particularly users with less-optimal PC hardware configurations may notice a slight negative effect in this area as a result of operating ELS. Users will also notice that ELS lights cannot sustain damage. This is a direct result of the inner-workings of the game and, regrettably, is an issue for which a solution is unlikely to be discovered.

## Requirements

ELS requires the following elements (in addition to the files provided in the download) in order to operate:

- A working PC-platform copy of the game Grand Theft Auto V.
- The Visual C++ Redistributable for Visual Studio 2015, found [here](#).
- The GTA V C++ ScriptHook loader by Alexander Blade found [here](#).
- A good “visualsettings.xml” file modification to ensure ELS lights don’t appear dim or dull.
- The presence of pro-ELS vehicle models.

**Tip:** A code reading program (such as Notepad++) is highly recommended for viewing and editing ELS configuration files, especially those in “.xml” format.

## Installation

Installing ELS may be done in a few easy steps:

- Place the ELS.asi, ELS.ini, and ELS folder into your main GTA V game directory (this is the same folder that houses the gtav.exe file) overwriting any older ELS versions.
- Unless you already possess the following file and it is more recent than the one provided, place the AdvancedHookV.dll file into your GTA V game directory.
- If you do not already have any, download and install pro-ELS vehicle models to use with ELS.
- Launch your game.

## Important to Prevent Issues

You can change several ELS options, including key bindings by opening and editing the ELS.ini file.

Always make sure that you are using the latest version of AdvancedHookV.dll. If the one provided in the ELS download is older than the one you might already have installed, keep the latter. Using an outdated AdvancedHookV.dll file could cause mods such as LSPDFR to malfunction.

Always ensure that your ELS vehicle configuration files (VCFs) are up to date and meet the latest standard. Otherwise, ELS or some of its features are likely to malfunction.

# ELS Configuration Files

## ELS.ini file

The main configuration file for ELS is ELS.ini and, if installed correctly, is located in the main GTA V game folder. This file may be opened, viewed, and edited with any text editor (though preferably Microsoft Notepad or Notepad++ should be used). This file allows the user to set several ELS parameters, including control keys and other general settings.

In the ELS.ini, the following elements should never be altered (unless otherwise indicated):

- Words in brackets, as they represent a file section.
- Text found to the left side of equal (=) signs, as these are specific option keys.

To alter settings in the ELS.ini file, the user must change the values to the right side of the equal signs with values appropriate to the option being changed. An entry that is either innately invalid or invalid with respect to the particular option being modified will be ignored and the default value will be imposed in-game.

**Tip:** Consult the appendix for lists containing detailed information on each ELS.ini option.

**Important note:** If a game session is active, the game must be shut down and launched again in order for changes made to the ELS.ini (or other ELS configuration files) to take effect.

## ELS.ini file ADMIN Section

The Admin section has one purpose: for the user to indicate the name of the VCF container folder. This must be the name of an existing folder inside the ELS folder. ELS will search for and use any valid VCFs found inside the indicated folder. All other folders inside the ELS folder (even if they also contain VCFs) will be ignored.

**Tip:** Storing VCFs in different folders could be useful when switching between various vehicle packs, rather than needing to overwrite the same VCFs every time.

## ELS.ini file CONTROL Section

The control section serves to configure which keyboard buttons will perform which ELS actions. A key's function is the action it performs when it is pressed in-game. Some keys have an alternate function when used in combination with the Alt or Ctrl buttons. For each of the options contained in this section, valid entries are restricted to any decimal keyboard key ID code.

**Tip:** Consult the DEFAULT CONTROLS (ELS-V) document for a more detailed look at ELS' control options and information necessary when attempting to edit them.

**Important note:** Beware of conflicts with the GTA V game controls as well as any possible conflicts with other script modifications that may be installed.



## Vehicle Configuration Files

Vehicle configuration files (VCFs) allow the user to set several ELS parameters specific to particular vehicle models. Normally, a specific VCF should be supplied with any downloaded ELS vehicle, as using the wrong VCF or an improperly configured VCF for a given vehicle model may result in unexpected and faulty ELS behavior for the model concerned once in game.

## Loading VCFs

In order for a group of VCFs to be detected by ELS, they must be placed in a folder (called a VCF container folder) within the ELS folder. The name of the VCF container folder must be specified in the ADMIN section of the ELS.ini file. VCFs placed inside the ELS folder proper or inside any folder within the ELS folder the name of which is not specified in the ADMIN section of the ELS.ini will not be detected by ELS.

In order to be activated, a VCF must have as its file name the name of a valid game vehicle model slot, in addition to the “.xml” file extension. For instance, a user desiring to apply an ELS configuration to the POLICE3 slot should name the desired VCF: “POLICE3.xml”. ELS will recognize add-on vehicle model names.

**Tip:** Any errors detected at this stage will be logged to the ELS.log file inside the main game folder.

## Creating and Editing VCFs

To create a new VCF, a user need simply copy an existing one, rename it, and configure it as desired. Care must be taken to ensure that the XML code elements of the VCF are maintained. Accidentally deleted brackets (“>”) or slashes, or inadvertently modified section labels (words within brackets), will result in the file failing to load, the output of an error, and potentially a crash. Thus, VCFs must be edited carefully. Only two types of text should be modified by the user:

- Text within quotation marks; ex. the “true” in the following case: <Label Attribute=“true”/>
- Text between closed labels on the same line; ex. the number in this case: <Label>1234</Label>

The correct entry or entry type (i.e. text or numerical) for a given label/option will depend on the option in question. An entry that is either innately invalid or invalid with respect to the particular option being modified will usually be ignored and the default value imposed in-game. Consult the appendix for lists containing detailed information on each VCF option and valid entries.

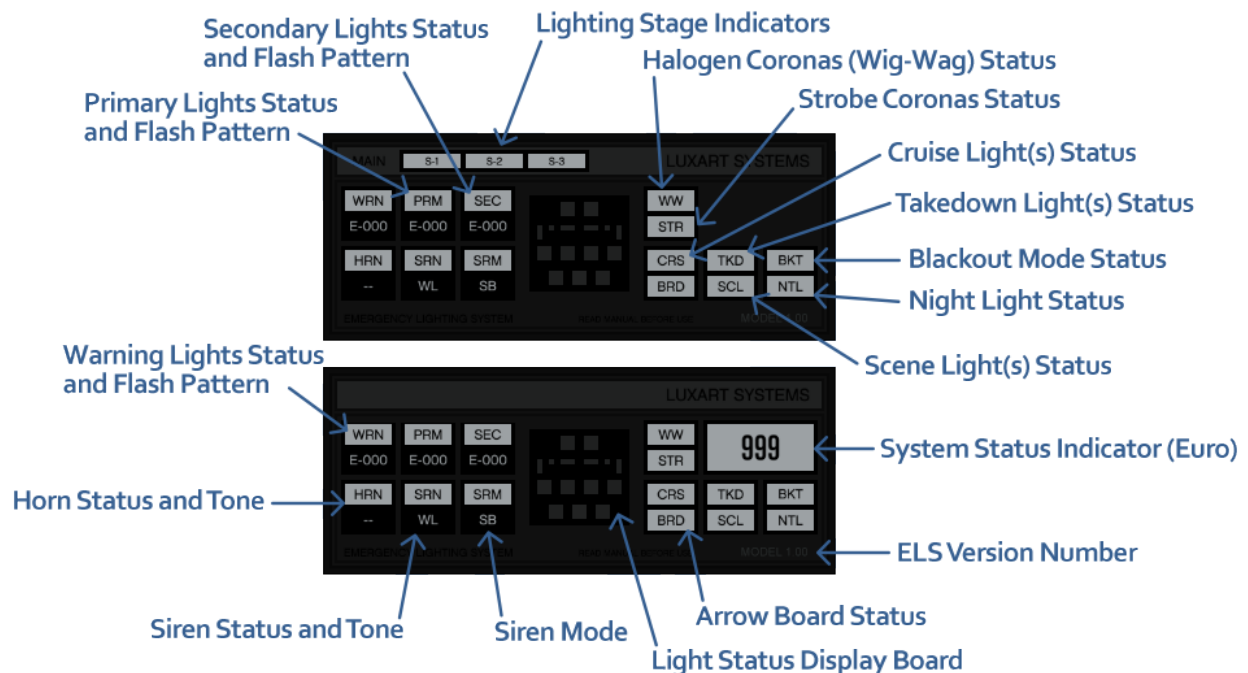
**Tip:** A code reading program (such as Notepad++) is highly recommended for viewing and editing VCFs.

# ELS Control Features

## ELS Information Display Panel

The ELS information display panel is the system's central hub. It can be toggled by pressing `Ctrl + TogInfoPan1` (P button by default). The display panel shows all necessary information regarding the state of the system. Some features are only accessible when the display panel is active. For instance, flash patterns may not be changed if the panel is off. Furthermore, depending on the vehicle model and the settings in its VCF, not all ELS features may be available to it in game.

Below is a diagram explaining the basics of the ELS information display panel. Note that the appearance of the panel will vary depending on the `LstgActivType` set for the vehicle in the VCF. The first panel depicts the traditional layout, whereas the second one bears the EURO layout (see the Lighting Stages section for more information).



Whenever a feature is active, its status indicator will appear colored or lit.

It is important to note the pattern ID codes. These identify a specific flashing pattern within a particular lighting group (primary, secondary, or warning) and format (ex. LEDS, STRB...). Whenever prompted in a VCF to indicate a desired pattern ID, the user should refer to these codes. And, in these cases, the user should simply provide the appropriate numerical digit representing the pattern in question. Left-side zeros, as well as dashes and letters must be omitted.

**Tip:** The information panel button light and panel header colors can be changed on a per-vehicle model basis by configuring the INTERFACE section of the relevant VCF.

## Keyboard Vs Controller Input

Due to the number of buttons required for optimal ELS operation, it has primarily been designed for use with a keyboard. However, ELS has been adapted to support gamepads, though, they offer a more limited control over the system. Consult the document “DEFAULT CONTROLS (ELS-V)” for more information.

**Tip:** Consult the document “DEFAULT CONTROLS (ELS-V)” for more information.

## ELS Key Lock

The ELS control keys can be enabled or disabled at any time via press of the `TogKeysLock` button (Scroll Lock by default). When the ELS key lock is active, all ELS keys will be disabled. At this point, pressing any ELS key will have no effect. A warning message will appear at the bottom of the user’s screen to indicate that ELS key lock is active. ELS key lock is always disabled by default. However, if it has been activated by the user and the warning message is present on the screen, a simple press of the `TogKeysLock` button will disable ELS key lock. At this point, all ELS control keys will become active and ELS can be operated as normal.

**Tip:** The ELS key lock is particularly useful when typing (ex. in the LSPDFR search menu) or whenever interaction with another script modification is required and key conflicts exist.

**Tip:** You can change the button for this feature in the control section of the `ELS.ini`.

## AI/NPC Vehicle Support

ELS controls the lighting and sirens of AI/non-player controlled ELS-enabled vehicles. As can be expected, this is a resource-intensive feature which may cause performance loss, particularly on less optimal PC hardware configurations. Though, outside of large-scale pursuits with a large number of high polygon count/detailed vehicle models on screen, the impact should be negligible. Note that this feature may be turned off in the `ELS.ini`.

## Multiplayer

As of version 1.00, ELS is intended exclusively for use within the single player mode of GTA V. No multiplayer features have been implemented, thus ELS should be considered incompatible with any multiplayer client: ELS will not, in its current state, be capable of synchronizing online.

# ELS Lighting Features

## ELS Light Groups

ELS separates main lighting functions into three separate groups: primary lights (PRML), warning lights (WRNL), and secondary lights (SECL). Each group is independent from the others and includes a specific set of lights (or “extra” components, for those familiar with GTA V vehicle modeling):

- PRML: lights/extras 1, 2, 3, and 4.
- WRNL: lights/extras 5 and 6.
- SECL: lights/extras 7, 8, and 9.

Each light group is automatically activated or deactivated depending on the lighting stage (LSTG) the system is placed in by the user, and other settings specified in the VCF. Additionally, the WRNL and SECL may be manually toggled by the user by way of the `Toggle_WRNL` and `Toggle_SECL` keys respectively.

## ELS Lighting Formats

Each lighting group may be set by the user to mimic specific lighting types such as LEDs, strobe lights, or rotators. These are called lighting formats and must be specified via the VCF, as they may not be changed in-game.

ELS allows the user to select from several different lighting formats for each light group. Lighting format determines the flash patterns available to a given light group on a given model and modifies the environmental lighting for that group accordingly, for added realism (ex. LED-like colors, or strobe or halogen colors). Not all lighting formats are available to all groups. Below is a list of each ELS lighting group and the lighting formats available to it.

ELS LIGHTING FORMATS PER LIGHT GROUP	
Warning Lights (WRNL)	
<b>LEDS</b>	LED imitation patterns.
<b>STRB</b>	Strobe imitation patterns.
<b>CHP</b>	California Highway Patrol type forced patterns and LSTG configuration.*
Primary Lights (PRML)	
<b>LEDS</b>	LED imitation patterns.
<b>STRB</b>	Strobe imitation patterns.
<b>ROTA</b>	Halogen rotator imitation patterns.
<b>DRO1</b>	LED imitation patterns but extra 1 is static and intended to toggle the emissive lights on the default siren rotators. (See modeling section.)
<b>DRO2</b>	LED imitation patterns but extra 1 is static and intended as transparent to hide/unhide the emissive material on the default siren rotators. (See modeling section.)

<b>DRO3</b>	LED imitation patterns but extras 1 and 2 are static and intended as transparent to hide/unhide the emissive material on the default siren rotators. (See modeling section.)
<b>CHP</b>	California Highway Patrol type forced patterns and LSTG configuration.*
<b>Secondary Lights (SECL)</b>	
<b>LEDS</b>	LED imitation patterns; main use of extras 7 and 9.
<b>STRB</b>	Strobe imitation patterns; main use of extras 7 and 9.
<b>TRAF</b>	LED directional or traffic advisor style patterns.
<b>ARRW</b>	Directional or traffic advisor style patterns mainly intended for use with arrow-shaped light boards.
<b>MARQ</b>	Static text marquee imitation patterns; extras used vary based on the selected pattern.
<b>CHP</b>	California Highway Patrol type forced patterns and LSTG configuration.*

\*Special lighting formats may have several effects. They may force a particular pattern (or set of patterns) for a given LSTG setting, include patterns designed specifically for the format, and synchronize patterns across light groups. Vehicle models must normally be very specifically configured for a special lighting format.

The configuration of a vehicle model or the suggestions of its author should determine what lighting format to use. For example, a vehicle model outfitted to make use of directional bar-like secondary lighting patterns should have its SECL type set to TRAF.

**Important note:** Using the wrong lighting format(s) could dramatically alter the way a vehicle's ELS lighting is intended to appear and function.

## ELS Lighting Stages

ELS possesses four lighting stages (LSTG). The LSTG can be changed by making use of the `Toggle_WRNL`, `Toggle_SECL`, keys, but is mainly operated via the `Toggle_LSTG` key. Each LSTG will activate or deactivate certain light groups as well as other ELS features. Here is a very simplified overview of each stage in its default state:

ELS LIGHTING STAGES	
<b>LSTG 0</b>	All ELS lighting is disabled.
<b>LSTG 1</b>	SECL are active, in addition to SBRN if available.
<b>LSTG 2</b>	SECL are active, as well as PRML (in LO setting), and any strobe-pattern auxiliary coronas.
<b>LSTG 3</b>	SECL, PRML (in full), WRNL, and all auxiliary coronas are active; siren may now be used.

At LSTG 2, the PRML are activated in a "LO" setting. This means that only two of the four available primary lights/extras will flash, and the environmental glow produced by them will be reduced by half. Which two primary lights become operational at LSTG 2 is determined by the `ExtrasActiveAtLstg2` option in the vehicle's VCF.

The user, by way of the `LstgActivationType` option in the VCF can set the activation method for the lighting stages. Four modes are available and explained briefly below. In all cases, the main activation results from pressing the `Toggle_LSTG` button, and the alternate activation by pressing `Alt + Toggle_LSTG`.

ELS LIGHTING STAGE ACTIVATION TYPES	
<b>MANUAL</b>	First press sets system to LSTG 1, second press LSTG 2, third press LSTG 3, and fourth press LSTG 0. Alternate combo will repeat this process backwards.
<b>INVERT</b>	First press sets system to LSTG 3, second press LSTG 2, third press LSTG 1, and fourth press LSTG 0. Alternate combo will repeat this process backwards.
<b>AUTO</b>	First press sets system to LSTG 3, second press LSTG 0. Alternate combo will cycle sequentially through the lighting stages backwards.
<b>EURO</b>	First press sets system to LSTG 3 (999), second press LSTG 0. Alternate combo will cycle through the lighting stages backwards. No lever clicking sounds will be heard when cycling through the lighting stages. Instead, only beeps will be audible. The information panel will have a slightly different layout.

## Preset and Forced Flash Patterns

Preset and forced flashing patterns can be applied to any or all of the three main ELS lights groups via the WRNL, PRML, and SECL sections of the VCF.

A preset pattern can be assigned to any light group for any LSTG at which that light group will normally be active—which varies across groups. When set to on in the VCF, a preset pattern will become the default pattern for that light group, at that LSTG, and will be automatically applied in game whenever the group is activated. A preset pattern can be changed in game, just as a normal pattern can. However, every time the light group is turned off and on again, the original preset pattern specified in the VCF will be re-applied.

Forced patterns can be assigned for each light group to any of the available siren tones or the main horn. Unlike preset patterns, while a forced pattern is active, the pattern for that light group cannot be changed in game.

**Tip:** Forced and preset patterns are identified in game by an asterisk next to the pattern ID number.

## Scan Flash Pattern Mode

In game, at the end of the pattern list for each light group is a “scan” pattern. This is not a traditional pattern, but rather a mode which will, by default, cause ELS to cycle randomly (approximately every 5-10 seconds) through the available patterns for the given light group.

The Scan mode can be customized (independently) for each light group via the VCF. When the custom scan pattern pool is enabled via the `ScanPatternCustomPool` section in the VCF, the flash patterns specified within the section will be cycled through by the Scan mode and all other patterns will be ignored. As many as 100 patterns can be added to the list (duplicates are acceptable). To add a pattern to the pool, simply add additional `<Pattern>0</Pattern>` lines among the existing ones, and replace the “0” with the pattern ID(s) of your choice—though, 0 is also an acceptable pattern ID. Remember, the patterns listed inside the `ScanPatternCustomPool` section will only be used if the `Enabled` option is set to “true”.

Additionally, Scan mode can be made to cycle through patterns sequentially (in the order listed), or randomly if the `Sequential` option is set to “false”.

## Auxiliary Coronas

ELS allows for the use of auxiliary coronas (CRNA) to simulate additional emergency lighting on a given vehicle. Unlike the “extra” components typically used by ELS, coronas are not parts or meshes built into a vehicle model but, rather, they are light sprites which can be dynamically created and controlled by the script within the game world. A nice advantage of coronas is that they can be damaged during collisions in game and will thereafter cease to function until the vehicle is repaired. However, a known issue which may sometimes result from using coronas is clipping: in some cases, coronas may be seen through small or thin parts of a vehicle.

Coronas are meant to be used as peripheral, auxiliary, lighting on a vehicle, such as front wig-wags or corner strobes, for instance. They can be made to emanate from any of a vehicle’s traditional—non-emergency—light housings. Thus, ELS coronas are separated into five groups:

- 1. Headlights (HL).
- 2. Tail lights (TL).
- 3. Front indicators (IF).
- 4. Back indicators (IB).
- 5. Reverse lights (RL).

Each group has two coronas: one for the left side and one for the right side of the vehicle. Furthermore, each corona group is mostly independent from the others. Therefore, except for in very limited cases, flash patterns will not synchronize across corona groups. Coronas are also completely separate from the traditional “extra” lights and thus independent of the other lighting groups (PRML, SECL, and WRNL).

As of ELS 1.00, there are 30 available corona patterns. For convenience, they are ordered as follows:

- 0: Off.
- 1-10: Halogen patterns.
- 11-20: Strobe patterns.
- 21-30: LED patterns.

Coronas cannot be toggled on or off independently. Instead, they are tied to the LSTG system. Strobe and LED coronas will become active on the vehicle at LSTG 2, whereas any halogen patterns will turn on at LSTG 3.

The CORONA section of the VCF allows the user to configure corona settings. Three parameters exist for each corona group: the default pattern ID (0 for off), the color of the left corona, and the color of the right side corona. Note that corona colors cannot be changed once in game.

**Tip:** The pattern of any corona group can be changed in game by using the following method: make sure that the ELS information panel is active (Alt + TogInfoPanl) and press any combination of Alt + [1 to 5].

## Takedowns and Scene Lights

Takedowns provide forward-facing directional lighting to illuminate the front area of the vehicle. The takedown (TKD) option can be toggled by pressing the `Toggle_TKDL` key.

Scene lights are instead used to provide illumination around the vehicle. They can be set to either illuminate only the sides of the vehicle—appropriate for regular police vehicles—or provide illumination all around the vehicle—mostly recommended for use with larger vehicles, such as ambulances.

## Steady Burn Lights

Steady burn lights (SBRN) can be enabled on a vehicle via the `UseSteadyBurnLights` parameter in its VCF. In game, SBRN will activate at LSTG 1 and higher. SBRN do not flash but instead maintain a steady pattern when on. They are controlled by the LSTG system, and cannot be toggled alone like other ELS features.

**Important note:** A vehicle model must be specifically configured to use SBRN. The feature will not work on incompatible vehicle models.

## Blackout Mode

Blackout mode (BKT) allows the user to instantly disable or enable all of the vehicle's non-emergency lights simultaneously. It may be toggled by pressing `Alt + Toggle_Takedowns`. BKT is not available if any emergency lighting is in use. Furthermore, when it is active, BKT will be automatically toggled off as soon as any ELS emergency lighting features are enabled.

## Cruise Lights

Cruise lights (CRS), when activated, will result in the vehicle's primary emergency lights being turned on. These will maintain a steady pattern and will emit a lower intensity environmental light than they would when the regular PRML patterns are active. In the VCF, the user may select which primary lights will activate with CRS. However, note that the CRS feature is not available to all PRML lighting formats—being typically limited to LED-type formats. Via the VCF, CRS can also be set to automatically turn off at LSTG 3.

## Arrow Board

ELS allows for the use of arrow boards (BRD): physical platforms for the mounting of emergency or directional lights, which can be raised and lowered upon the user's command. An arrow board can be enabled on a vehicle via the `ArrowboardType` option in the MISC section of the VCF. The user should consult the ELS Vehicle Modeling section for additional information regarding ELS arrow boards.

**Tip:** The arrow board can be raised and lowered in game by pressing `Alt + Toggle_SECL` key.

**Important note:** The arrow board should only be enabled on a vehicle model that is specifically designed to support the feature. Furthermore, it is important to ensure that the option that has been selected is compatible



with the vehicle model in question. For instance, a vehicle model designed to use the bonnet as an arrow board will not behave correctly if its arrow board type option is set to "BOOT".

## Vehicle Damage

Auxiliary coronas will individually cease to function whenever they sustain impact damage in-game.

Regarding the ELS main lights (PRML, SECL, and WRNL), damage functions a little differently. This is because the game is incapable of registering damage caused to the vehicle parts used as ELS lights. To compensate, ELS uses a different method: past a certain vehicle body damage threshold, the ELS main lights will begin to malfunction and flash patterns across all light groups will be disrupted. As damage to the vehicle increases, these disruptions will become more apparent.

## ELS Sound Features

### ELS Siren Overview

When ELS is active on a vehicle in single player, the default game siren (usually activated by the game's horn key) is unavailable. Instead, it is replaced by the ELS siren. The ELS siren may make use of any of the siren sounds available in GTA V. Notwithstanding the horn and manual tones, ELS siren features may only be activated when the system is in LSTG 3. When the system is in LSTG 3 and any siren feature is active, once the LSTG is lowered, it will be automatically toggled off.

### ELS Main Siren

The ELS main siren comprises the 4 available main siren tones: WL, YP, A1, and A2. These respectively refer to "wail", "yelp", "alternate 1" and "alternate 2". These names are merely for reference and do not preclude the user from changing the sounds of these tones to ones that do not necessarily match the descriptors.

In addition to the main `Toggle_SIRN` button which activates the siren at the first tone in the sequence (WL), ELS provides four siren tone buttons (`Snd_SrnTon1`, `Snd_SrnTon2`, `Snd_SrnTon3`, and `Snd_SrnTon4`) which allow the user to manually select any of the four tones at any time. Pressing the tone button of the tone that is playing will turn off the siren.

When outside the vehicle, the main siren can be toggled off by holding the `Snd_SrnPnic` button near the driver's window.

**Tip:** Individual siren tones or even all siren tones can be disabled for any vehicle by toggling off the relevant sound options in the VCF.

### ELS Main Siren Scan Mode

A "scan" mode is available for the main ELS siren which, when activated, causes the system to play through the available main siren tones randomly, and at random time intervals ranging from 2 to 8 seconds. The siren scan mode can be activated via press of the `Snd_SrnScan` button.

If the main siren is off, pressing the `Snd_SrnScan` button will turn on the siren with the scan mode active. Pressing the scan mode button while the main siren is on will turn off scan mode while maintaining the last played siren tone. Pressing any of the individual main siren tone buttons while the siren scan mode is on will turn off the feature and play the tone associated with whichever button was pressed.

### ELS Auxiliary Siren

The ELS auxiliary siren is an extra siren tone, independent from the ELS main siren, which can be toggled via press of the `Snd_SrnTonX` button. It may play alone or at the same time as the main siren. The auxiliary siren will not be interrupted by any of the horn or manual tones. The sound of the auxiliary siren can be changed via the VCF, where it may also be disabled if desired.

When outside the vehicle, the auxiliary siren can be toggled off by holding the `Snd_SrnPnic` button near the driver's window.

**Tip:** The auxiliary siren tone may be especially useful for fire and EMS vehicles, as this slot can be used to place and play mechanical or "Powercall" siren.

## ELS Horn and Manual Tones

ELS provides three horn types: the main horn (AH), a primary manual siren tone (M1) and a secondary manual siren tone (M2). The AH and M1 may be used at any time, regardless of LSTG.

By default, the AH will pause the main siren if it happens to be playing. However, this can be changed via the VCF.

When activated by the user via press of the `Sound_Manul` button, the M1 tone will play for as long as the button is held down. If the main siren is on, the next tone in the sequence (if available) will sound for as long as the button is depressed. For instance, if the wail siren tone is playing and the M1 is activated, the siren tone will change to yelp.

When the main siren is off and the `Sound_Ahorn` and `Sound_Manul` buttons are pressed simultaneously, the M2 tone will play. When the main siren is on, pressing both these buttons pressed together will have no effect.

**Tip:** The sound for each manual tone can be set via the VCF. They can also be individually disabled.

## ELS Siren Modes

ELS provides two siren operation modes: standby (SB) and hands-free (HF). The user may switch between these two modes by pressing `Alt + Toggle_SIRN`. In both cases, the siren will be disabled as soon as LSTG 3 is exited or the siren is manually toggled off by the user.

In SB mode, the user must activate the siren when desired via press of the `Toggle_SIRN` key or the individual siren tone buttons.

In HF mode, siren control will be transferred to the default game horn button. One press activates the siren, subsequent long presses browse through the available siren tones, and double-tapping the horn button at any time toggles the siren off.

**Tip:** The user's preferred siren mode can be preset for each vehicle model via the INTERFACE section of the VCF.

## ELS Siren Tones and AI Behavior

Except in special circumstances and when the system is in LSTG 3, ELS lights alone will not affect AI behavior. This is by design, to allow the user a greater deal of control over AI movements. All ELS sirens and horns, on the other hand, will affect AI behavior.

Using the primary tone (`SRN_Tone1` in the VCF) will cause NPC vehicles to yield normally. However, all other tones, in addition to causing AI vehicles to yield, will also force AI vehicles directly in front of the user's vehicle to move forward and out of the way. This is part of ELS' traffic control system and can be disabled in the ELS.ini. This feature is particularly useful at intersections when all lanes are occupied and it is necessary to force NPC vehicles to

proceed through a red light. Manual tones and the air horn will have the same effect. Using a non-primary siren tone in addition to the horn will cause the AI to move at a more hurried pace.

**Tip:** To prevent NPC accidents, judicious use of the horn and manual and alternate siren tones is advised.

## Panic Mode

ELS provides a “panic mode” feature which can be activated by holding the `Snd_SrnPnic` button at the driver’s side-window when standing outside the vehicle. Panic Mode will turn on all of the vehicle’s lighting features in addition to the main siren. Specific flash patterns for each main lighting group (WRNL, PRML, and SECL) and a desired siren tone can be forced for Panic Mode via the VCF.

The Panic Mode button can also be used to toggle off the vehicle’s siren features if they were left on when the vehicle was exited, without requiring the user to reenter the vehicle. The “off” toggle for Panic Mode will not turn off the vehicle’s lighting, but instead return the original flash patterns (in the event that any forced patterns had been applied by the mode).

**Tip:** Customize your panic mode’s flash patterns and set the siren tone to be used via the vehicle’s VCF.

## AI/NPC Vehicle Sirens

ELS controls the siren and horn functions for AI/non-player controlled vehicles using VCF settings. AI vehicles will occasionally change their siren tones and use their horns. If any or all of the siren or horn tones are disabled in the VCF for a given vehicle model, the AI vehicles of that model will behave accordingly. To save resources, AI vehicles will not use auxiliary sirens or make use of the siren Scan Mode.

# ELS Vehicle Model Development

## Introduction

ELS cannot operate without vehicle models specifically designed to make use of the script's features. An improperly configured vehicle model will simply not work correctly. For this reason, it is important for any ELS vehicle modeler to understand how ELS works.

## How ELS Works

Before beginning, it is important to understand how ELS works at the code level. Parts named "extra" are those which will appear randomly on a vehicle as it spawns in the game. On default game vehicles, extra parts are normally ads (as on busses or taxis), roof scoops, supplemental grilles, and other such vehicular accessories. Any given GTA V vehicle can be outfitted with a maximum of 12 of these (extra\_1 to extra\_12). These parts can be added onto or removed from a vehicle in-game at any time by use of special code.

ELS makes use of the extra parts system by toggling extras on and off at various intervals in order to mimic light flashing patterns. Therefore, ELS at the modeling level, relies solely upon "extra" parts setup to appear as lights. In order to achieve this, extra parts intended to be ELS lights must be assigned "lightsemissive" materials. This will ensure that they will glow once toggled on in-game. Therefore, an ELS light extra part, in the vast majority of instances, is nothing more than a rectangle—or some other flat shape, as the case may require—with an emissive light texture mapped onto it.

## Modeling for ELS

ELS vehicle parts and models for GTA V must be created using ZModeler 3 (ZM3) by Zanoza Software. A basic modeling knowledge and understanding of the program are required in order to proceed. The ELS User Guide and Reference is not intended as a modeling tutorial, but rather as a guide for those with the necessary skillsets to configure and optimize their projects for use with ELS.

## Extra Part Allocation

Extra part numbers are very important as they determine with which light group (WRNL, PRML, or SECL) any given extra will "flash". The list below explains how extra parts are allocated according to ELS light group:

ELS EXTRA PART ALLOCATION PER LIGHT GROUP	
<b>PRML</b>	extra_1, extra_2, extra3, extra_4
<b>WRNL</b>	extra_5, extra_6
<b>SECL</b>	extra_7, extra_8, extra9
<b>SBRN</b>	extra_ten
<b>SCL</b>	extra_11

TDL	extra_12
-----	----------

If the features associated with extras 10 to 12 are disabled in the VCF, they will not be handled by ELS. These parts can then be used as extra/random vehicle components, free from ELS interference.

## Extra Part Mesh Placement

ELS flash patterns require a specific positioning of the extra parts within any given light group as they relate to each other. Thus, the placement of extra parts is crucial, as incorrect positioning will lead to incorrect flash patterns. Normally, number of the extra part, the closer it should be to the left side of the car. This also ensures that once the ELS environmental lighting effects come into play in game, they will appear more naturally synchronized with the position of the ELS light parts.

Consult the appendix for a diagram demonstrating the ideal orientation and positioning for extra parts on a vehicle model.

## LOD Coronas and Extra Part Nodes

In GTA V, emissive textures tend to become dimmer and less visible at range. To mitigate this, LOD coronas become active past a distance specified in the ELS.ini. Their purpose is to supplement ELS texture-based lights (i.e. the extra part meshes) at range. LOD coronas are automatically generated and positioned by ELS onto the extra part nodes and will flash with them. Thus, modelers should place extra part nodes with this in mind for best effect.

## Environmental Lighting

Environmental lighting settings for ELS vehicles are controlled almost entirely by the ENV\_LIGHTS section of the VCF. Options E1 to E4 control the settings for the PRML extras (1 to 4), whereas options E7 to E9 control the settings for the SECL extras (7 to 9). For the best results in game, the ENV\_LIGHTS options should reflect the position and color of their respective extras. For instance, if extra\_1 is assigned a red light texture and has been placed on the left side of the vehicle, then the P1 option should reflect this.

The environmental lighting parameters are ordered as follows: [toggle (on or off), color, position offset from vehicle X, position offset from vehicle Y, position offset from vehicle Z].

## Slicktops

A slicktop option exists in MISC section of the VCF. When this feature is turned on, ELS will automatically adjust the spread and intensity of the PRML environmental lighting to a degree that would be considered more visually appropriate for a slicktop-type vehicle.

## Unused Extras

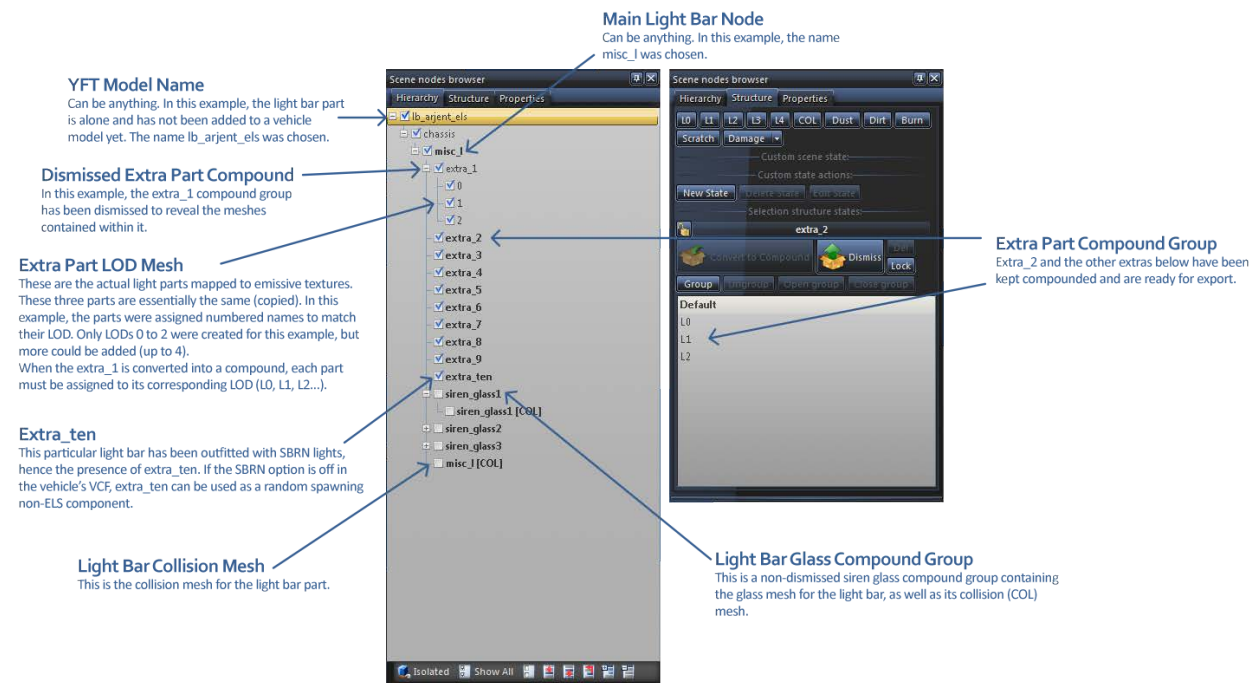
Some ELS features can be disabled via the VCF through the parameters `AllowTkdl` (TKD), `AllowScnl` (SCL), and `AllowSbrn` (SBRN). When any of these features are turned off, their corresponding extras will be freed for use as regular, randomly spawning vehicle components, no longer under ELS control. Alternatively, the “EOVERRIDE”—or, extras override—section of the VCF allows the user to dissociate any vehicle extras from ELS.

## Default Siren Lights

Although ELS is predicated on the use of vehicle extra components as a method for simulating emergency lights, it also allows for hybrid vehicles. Thus, ELS supports vehicles that use both ELS (extra lights) and default siren lights. In some circumstances, this might be particularly beneficial, such as when outfitting vehicle models with default rotating lights. The `DfltSirenLtsActivateAtLstg` option in the MISC section of the VCF allows the user to select at which LSTG the vehicle’s default siren lights will activate (default is 3).

## Model Hierarchy

In a vehicle model's hierarchy, extra parts abide by the following nomenclature pattern: “extra\_X”. That is, “extra” followed by an underscore, then followed by the number of the extra (1-12). Note, however, that there is an exception to this rule: extra 10 must be named “extra\_ten”. For unknown reasons, this is how the game recognizes this particular component. Ideally, each extra should have at least 3 LODs (L0 to L2) to ensure that ELS lights remain visible past a reasonable distance in game; but up to 5 can be created (L0 to L4). For the purposes of ELS, no collision ([COL]) mesh is required for extras. The graphic below demonstrates the hierarchical layout of a basic ELS light bar model:



## Note Regarding LEDS and STRB Secondary Lighting Formats

The LEDS and STRB lighting formats for the secondary lighting group (SECL) are intended for use as general or peripheral secondary lighting, and are also meant to be symmetrical on the vehicle model (on a left-right split)—hence the emphasis on the use of only two extras rather than three. Thus, though the DRCT and MARQ lighting formats make equal use of all three secondary extras (7, 8, and 9), the LEDS and STRB type flashing patterns instead make main use of extras 7 and 9. However, this does not mean that extra 8 is disabled for the LEDS and STRB types. It will still flash if it exists on the model, but its flashes will—depending on the pattern—be synchronous with either extra 7 or 9.

## Takedowns and Scene Lights

The TKD and SCL behave much like the regular PRML, SECL and WRNL lights. Mesh assigned to an emissive material is used to simulate lights. However, dummy positioning for TKD and SCL is also important, as it determines the origin and position of the environmental lighting for these features.

The TKD environmental light will be duplicated and mirrored on the opposite side of the vehicle if the `Mirrored` option in the VCF is set to true. Otherwise, only one light will be emitted, from the position of the dummy.

As for SCL, when the `IlluminateSidesOnly` option is set to true in the VCF, just as with mirrored TKD, a projected environment light will be emitted from the position of the dummy, facing away from the vehicle, and another light will be created in the exact same position on the opposite side of the vehicle. However, when the SCL `IlluminateSidesOnly` option is set to false, the dummy position will be ignored. Instead of projected lighting, large spherical illumination will be used at the sides and rear of the vehicle. (Thus, the positioning of this type of lighting cannot be controlled by the user.)

## Arrow Board Modeling

The arrow board feature (BRD) makes use of controllable rotating component of vehicle models in order to power the moving warning platforms. As such, on a vehicle model designed to make use of this feature, the vehicle's actual hood (bonnet) or trunk (boot) parts—depending on the modeler's desired configuration—must be renamed to something else (such as `misc_a`, for instance), and its spherical dummy must be converted to a box type dummy in order to prevent the hood (or trunk) from swinging freely in-game. Likewise, the part intended to serve as the moving warning platform must be renamed according to the part desired from those available. Below is a list of accepted VCF entries and the corresponding vehicle components they activate. Note that some entries allow for two boards to be used at once.

ELS ARROW BOARD TYPES	
<b>OFF</b>	The arrow board feature will not be enabled on the vehicle.
<b>BONNET</b>	BRD enabled and will use “bonnet” vehicle component.
<b>BOOT</b>	BRD enabled and will use “boot” vehicle component.
<b>BOOT2</b>	BRD enabled and will use “boot2” vehicle component.



<b>BOOTS</b>	BRD enabled and will use both “boot” and “boot2” vehicle components.
--------------	----------------------------------------------------------------------

The dummy associated with the BRD will form its axis of rotation so it must be converted to a sphere type dummy. Furthermore, the warning platform should be kept in the lowered position by default (in ZM3) otherwise it will appear raised by default in game. In order for the extra lights to move along with the warning platform, they should be made children of the warning platform part.

**Important note:** Remember to set the ArrowboardType option in the vehicle’s VCF according to the model’s design and the available entries listed in the table above.

## Adjusting a Vehicle Model for Auxiliary Coronas

The ELS coronas feature works by automatically determining the position of recognized light dummies on the vehicle model and spawning coronas at those locations. Therefore, any vehicle model can be rather easily adjusted to accommodate the coronas feature. The only model-based requirement is that the recognized dummies be properly positioned, according to the designer’s needs. Recognized light dummies will depend on the corona group(s) activated in the VCF. Below is a list of the corona groups and their corresponding vehicle dummy associations:

ELS CORONA GROUPS AND CORRESPONDING LIGHT DUMMIES	
<b>Headlights</b>	headlight_l and headlight_r
<b>Tail lights</b>	taillight_l and taillight_r
<b>Front Indicators</b>	indicator_lf and indicator_rf
<b>Back Indicators</b>	indicator_lr and indicator_rr
<b>Reverse Lights</b>	reversinglight_l and reversinglight_r

Vehicle model designers should ensure that coronas and “extras” do not overlap or are used to fulfil the same roles, as that would be redundant and could possibly lead to visual conflicts in-game. Furthermore, in order to prevent or reduce the probability of corona “clipping” (or coronas being seen through objects) it is recommended that coronas be placed behind several mesh layers.

## DRO PRML Formats

The “DRO” primary lighting formats are meant to make use of the default rotating “sirens” available to some GTA V vehicle model slots, such as the POLICE and SHERIFF. As such, the DRO PRML types will not work correctly on any other vehicle model slot (unless the game data files have been edited to allocate the POLICE and/or SHERIFF default siren type to other vehicle slots in question.)

For all DRO types, the LEDS PRML type patterns are available to the primary extras not used by the DRO process.

**DRO1:** Static extra is extra\_1 (extras 2 to 4 can be used as LED lights elsewhere on the vehicle). The static extra is meant to be applied to an emissive material. Once LSTG3 is active, extra\_1 will turn ON, thus its emissive textures will become visible. The default rotators should be placed so as to “wrap around” the emissive textures of extra\_1. This way, the rotators will spin around the extra\_1 lights.

**DRO2:** Static extra is extra\_1 (extras 2 to 4 can be used as LED lights elsewhere on the vehicle). The static extra is meant to be applied to an invisible glass material. Its purpose is to hide and unhide the emissive textures applied to the individual default rotators. Thus, at all lower light stages, the static extra will be ON (hiding the emissive textures). At LSTG3, it will be turned OFF. At this point, the emissive textures applied to the rotators will become visible.

**DRO3:** Static extras are extra\_1 and extra\_2 (extras 3 and 4 can be used as LED textures elsewhere on the vehicle). Otherwise, DRO3 operates exactly as does the DRO2 type.

With all DRO types, in order to avoid the default siren lights/coronas from being visible and conflicting with the ELS lights, make sure to move the siren dummies (only the dummies, and not the rotator models) used way beneath the vehicle model. However, keep in mind that these dummies determine the axis of rotation of the rotators, so as far down as they may be moved, ensure that from a top-down view they remain centered on the rotator models.

**Note:** Special thank you to BxBugs123 and PoliceWag for their development of DRO modeling techniques.

# Appendix

## ELS Abbreviations

The abbreviations and acronyms used in the realm of ELS are many. The following list should serve as a reference for most of them.

- AH: Main vehicle horn.
- A1: Alternate 1 siren tone.
- A2: Alternate 2 siren tone.
- AX: Auxiliary siren.
- BRD: Movable warning light platform (arrow board).
- ARRW: Arrow-based lighting type available to SECL group.
- BKT: Blackout mode.
- CRS: Cruise lights.
- TRAF: Directional lighting format available to SECL group.
- ELS: Emergency Lighting System.
- HF/HDSF: Hands-free siren mode.
- HRN: Term used to encompass all horn features (AH, M1, M2).
- LEDS: LED lighting format available to all light groups.
- LSTG: Lighting stage.
- M1: Main manual siren tone.
- M2: Secondary manual siren tone.
- MARQ: Marquee lighting format available to SECL group.
- NTL: Night light.
- PNIC: Panic mode.
- PRML: Primary light group.
- ROTA: Rotator imitation lighting format available to PRML group.
- SBRN: Steady-burn light(s).
- SCAN: Scan mode, applies to flash patterns and the main siren.
- SCL: Scene lights.
- SECL: Secondary light group.
- SRN: ELS main siren (not to be mistaken for default game siren).
- SB/STBY: Standby siren mode.
- STR: Strobe-type flash pattern coronas.
- STRB: Strobe lighting format available to all light groups.
- TKD: Takedown lights.
- VCF: ELS vehicle configuration file.
- WL: Wail siren tone.
- WRNL: Warning light group.
- WW: Halogen-type flash pattern coronas (wig-wags).
- YP: Yelp siren tone.

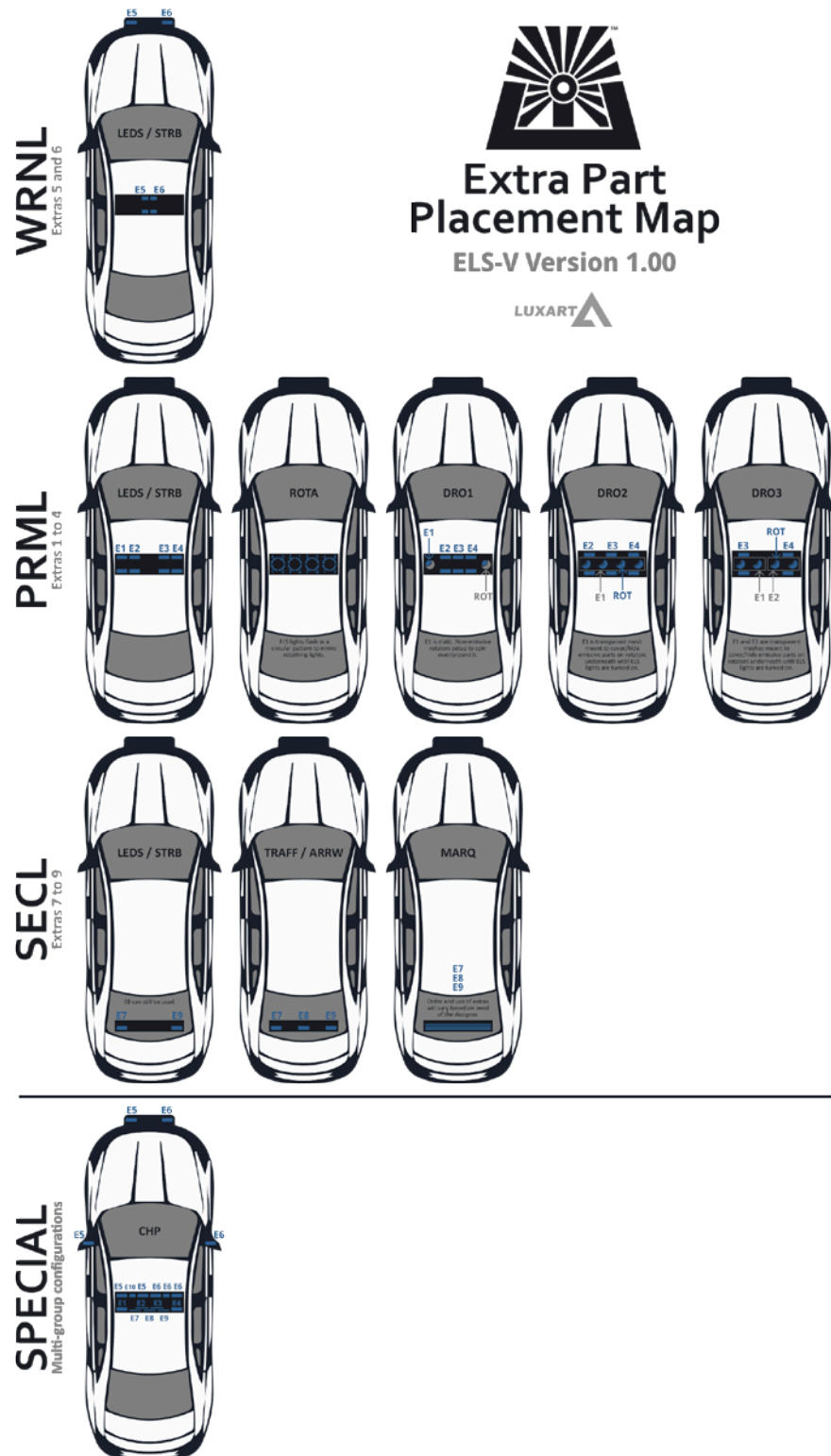
## Audio Strings

At the time of writing this guide, only the horn and siren audio strings listed below are known. These are meant for use in the SOUNDS section of the VCF.

- **SIRENS\_AIRHORN** (Main air horn, **0x0EA58C7C**.wav)
- **VEHICLES\_HORNS\_SIREN\_1** (Main wail, **0x0D329446**.wav)
- **VEHICLES\_HORNS\_SIREN\_2** (Main yelp, **SIREN\_2**.wav)
- **VEHICLES\_HORNS\_POLICE\_WARNING** (Main priority, **POLICE\_WARNING**.wav)
- **VEHICLES\_HORNS\_AMBULANCE\_WARNING** (Ambulance priority, **AMBULANCE\_WARNING**.wav)
- **VEHICLES\_HORNS\_FIRETRUCK\_WARNING** (Fire truck horn, **0x14BFBCE3**.wav)

## ELS Part Placement

Naturally, ELS relies on the ingenuity and imagination of those creating or modifying vehicle models. However, the graphic below illustrates the basic ELS extra part placement schemes for every light group and lighting format.



## ELS.ini Options

The following lists explain each of the options contained within the main ELS configuration file (ELS.ini). Note that for convenience, the reference for ELS controls is located in a separate document: “DEFAULT CONTROLS (ELS-V)”.

ADMIN		
VcfContainerFolder	The name of the folder (inside the ELS folder) from which ELS should load the vehicle configuration files (VCFs).	
	VALID INPUT	THE NAME OF A VALID FOLDER INSIDE THE ELS FOLDER, WHICH CONTAINS VALID VCFs FOR ELS TO LOAD

LIGHTING		
LightFlashDelayMainLts	Sets the global delay between light flashes for the main ELS lights. Used to adjust the speed of the lights (lower is faster).	
	VALID INPUT	1 – 1000
LightFlashDelayCoronas	Sets the global delay between light flashes for the auxiliary coronas. Used to adjust the speed of the lights (lower is faster).	
	VALID INPUT	1 – 1000
EnvLtsMultMainLeds_XXX	Multipliers for the size, range, and intensity of the PRML, SECL, and WRNL environmental lighting.	
	VALID INPUT	0.1 – 100.0
EnvLtsMultCrnaHalo_XXX	Multipliers for the size, range, and intensity of the halogen corona environmental lighting.	
	VALID INPUT	0.1 – 100.0
EnvLtsMultCrnaOthr_XXX	Multipliers for the size, range, and intensity of the strobe and LED corona environmental lighting.	
	VALID INPUT	0.1 – 100.0
LodCoronaDistance	Sets at what distance from any vehicle the LOD coronas for the main ELS lights will appear.	
	VALID INPUT	1.0 – 1000.0

AUDIO		
BtnClicksBtwnSrnTones	Sets whether button click/beep sounds will be heard when the siren tone buttons are pressed, as they are with other features.	
	VALID INPUT	TRUE / FALSE
BtnClicksBtwnHrnTones	Sets whether button click sounds will be heard when the horn or manual tone buttons are pressed.	
	VALID INPUT	TRUE / FALSE

GENERAL		
MaxActiveVehs	Sets the global flash speed delay for ELS flash patterns (lower is faster).	
	VALID INPUT	1 – 200
ElsMaxRangePl	Sets the range (in meters) past which player vehicles using ELS will be discarded.	
	VALID INPUT	50 – 5000
ElsMaxRangeAi	Sets the range (in meters) past which AI vehicles using ELS will be discarded.	
	VALID INPUT	50 – 5000
ElsActiveOnAi	Determines whether or not ELS will animate AI vehicles.	
	VALID INPUT	TRUE / FALSE
ElsTrafCtrlOn	Sets whether the ELS traffic control feature will be active.	
	VALID INPUT	TRUE / FALSE

## Vehicle Configuration File (VCF) Options

The following lists explain each of the options contained in the ELS vehicle configuration files (VCFs).

INTERFACE		
LstgActivationType	Sets the light stage (LSTG) activation type for the vehicle.	
	VALID INPUT	MANUAL / INVERT / AUTO / EURO
DefaultSirenMode	Sets the vehicle's preset siren mode.	
	VALID INPUT	STANDBY / HANDSFREE
InfoPanelHeaderColor	Sets the top color of the ELS information panel for the vehicle.	
	VALID INPUT	GREY / RED / YELLOW
InfoPanelButtonLightColor	Sets the button light color of the ELS information panel for the vehicle.	
	VALID INPUT	BLUE / GREEN / ORANGE / RED / YELLOW

MISC		
VehicleSlicktop	When set to on, will modify range and intensity of PRML environmental lighting to more appropriate levels.	
	VALID INPUT	TRUE / FALSE
ArrowboardType	Sets whether or not, and which type of arrow board (BRD) to enable for the vehicle. Vehicle model must be compliant.	
	VALID INPUT	OFF / BOOT1 / BOOT2 / BOOTS / BONET / BONBT
UseSteadyBurnLights	Sets whether steady burn lights feature (SBRN) will be available for the vehicle. Vehicle model must be compliant.	
	VALID INPUT	TRUE / FALSE
DfltSirenLtsActivateAtLstg	Sets at which lighting stage the vehicle's default (non-ELS) siren lights will become active. (Default is 3.)	
	VALID INPUT	1 – 3
Takedowns		
AllowUse	Sets whether takedown lights feature (TKD) will be available for the vehicle. (Vehicle model must be compliant.)	
	VALID INPUT	TRUE / FALSE
Mirrored	Sets whether the takedown spotlight will be mirrored on the opposite side of the vehicle. (Uses extra_11 dummy pos. as reference.)	
	VALID INPUT	TRUE / FALSE
SceneLights		
AllowUse	Sets whether scene lights feature (SCL) will be available for the vehicle. (Vehicle model must be compliant.)	
	VALID INPUT	TRUE / FALSE
IlluminateSidesOnly	Sets whether the scene lights will illuminate the sides of the vehicle only (true) or the sides and rear if set to false.	
	VALID INPUT	TRUE / FALSE

EOVERRIDE		
Extra01 → Extra12		
IsElsControlled	Sets whether the given extra will be controlled and animated by ELS or ignored. (Overrides any other VCF options for given extra.)	
	VALID INPUT	TRUE / FALSE
AllowEnvLight	Sets whether the given extra will emit any environmental lighting.	
	VALID INPUT	TRUE / FALSE
Color	Sets the environmental lighting color for the given extra.	
	VALID INPUT	AMBER / BLUE / EBLUE / GREEN / RED / WHITE
OffsetX	Sets the X-axis offset of the environmental light for the given extra relative to the vehicle (-left, +right).	
	VALID INPUT	ANY POSITIVE OR NEGATIVE FLOAT VALUE
OffsetY	Sets the Y-axis offset of the environmental light for the given extra relative to the vehicle (-back, +front).	
	VALID INPUT	ANY POSITIVE OR NEGATIVE FLOAT VALUE

<b>OffsetZ</b>	Sets the Z-axis offset of the environmental light for the given extra relative to the vehicle (-down, +up).	
	VALID INPUT	ANY POSITIVE OR NEGATIVE FLOAT VALUE

CRUISE		
<b>DisableAtLstg3</b>	Sets whether cruise lights will automatically disable once the system enters LSTG 3.	
	VALID INPUT	TRUE / FALSE
UseExtras		
<b>Extra1 – Extra4</b>	Sets whether the given extra/light will be used by the cruise lights feature.	
	VALID INPUT	TRUE / FALSE

CORONAS		
Headlights → ReverseLights		
<b>DfltPattern</b>	Sets the default lighting pattern for the given corona light group.	
	VALID INPUT	ANY VALID CORONA PATTERN ID – USE 0 FOR OFF
<b>ColorL</b>	For the given corona light group, sets the color of the left side corona.	
	VALID INPUT	AMBER / BLUE / EBLUE / GREEN / RED / WHITE
<b>ColorR</b>	For the given corona light group, sets the color of the right side corona.	
	VALID INPUT	AMBER / BLUE / EBLUE / GREEN / RED / WHITE

SOUNDS		
MainHorn		
<b>InterruptsSiren</b>	Sets whether the main horn, when pressed, will cause the siren to pause.	
	VALID INPUT	TRUE / FALSE
<b>AudioString</b>	Link to the audio file to be used for the main horn sound. Must be a string recognized by the game engine.	
	VALID INPUT	ANY AUDIO STRING RECOGNIZED BY GTA V (See Audio Strings section.)
ManTone1 → PanicMde		
<b>AllowUse</b>	Sets whether the given manual or siren tone will be available for use on the vehicle.	
	VALID INPUT	TRUE / FALSE
<b>AudioString</b>	Link to the audio file to be used for the given manual or siren tone sound. Must be a string recognized by the game engine.	
	VALID INPUT	ANY AUDIO STRING RECOGNIZED BY GTA V (See Audio Strings section.)

WRNL, PRML and SECL		
<b>LightingFormat</b>	Sets the lighting format for the given light group (WRNL, PRML, or SECL).	
	VALID INPUT	(WRNL: LEDS / STRB) (PRML: LEDS / STRB / ROTA / DRO1 / DRO2 / DRO3) (SECL: LEDS / STRB / TRAF / ARRW / MARQ)
<b>ExtrasActiveAtLstg2</b> (PRML)	Sets which PRML extras will flash when the system is in LSTG 2.	
	VALID INPUT	1AND4 / 2AND3
<b>DisableAtLstg3</b> (SECL)	Sets whether the SECL will be automatically turned off once the system enters LSTG 3.	
	VALID INPUT	TRUE / FALSE
PresetPatterns		
Lstg1 → Lstg3		
<b>Enabled</b>	Sets whether to apply a preset flash pattern for the given lighting stage.	
	VALID INPUT	TRUE / FALSE
<b>Pattern</b>	Sets the pattern to be used.	
	VALID INPUT	ANY VALID PATTERN ID FOR THE GIVEN LIGHTING GROUP AND FORMAT
ForcedPatterns		
MainHorn → PanicMde		
<b>Enabled</b>	Sets whether to apply a forced pattern for the given audio tone or feature.	
	VALID INPUT	TRUE / FALSE



	VALID INPUT	TRUE / FALSE
Pattern	Sets the pattern to be used.	
	VALID INPUT	ANY VALID PATTERN ID FOR THE GIVEN LIGHTING GROUP AND FORMAT
<b>ScanPatternCustomPool</b>		
Enabled	Sets whether to use a preset pool of patterns for the flash pattern scan feature. (See relevant Guide section for more information.)	
	VALID INPUT	TRUE / FALSE
Sequential	Sets whether the scan feature will play through the patterns randomly or in their listed order.	
	VALID INPUT	TRUE / FALSE
Pattern	A pattern ID to be used by the scan feature when the custom pool is enabled. As many as 100 can be listed.	
	VALID INPUT	ANY VALID PATTERN ID FOR THE GIVEN LIGHTING GROUP AND FORMAT



The ELS User Guide and Reference is written and illustrated by Lt.Caine.  
© Copyright 2016 Luxart