**Science and Technology (S&T) Legislative Landscape:**

**Mapping State-Level S&T Legislation in the US**

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**Background:** The Office of Policy Analysis and Research (OPAR) at the Georgia Tech Research Institute conducts applied policy research on state-level science and technology (S&T) policy. OPAR has a portfolio of legislative research that collects, tracks, and classifies state-level legislation called the *S&T Legislative Landscape*. The objective of this legislative research is to provide a comparative analysis of each state’s public policy towards S&T across the country. This paper will present the research results from OPAR’s S&T Legislative Landscape and the progress with the methodology since the paper submission at the 2009 Atlanta Conference on Science and Technology Policy.

**Methodology:** The S&T Legislative Landscape utilizes a list of S&T “keywords” to query for relevant bills in state legislative databases. Examples of keywords include cloud computing, radio frequency identification, global warming, and smart grid. Each keyword serves as an identifier used to capture state bills that legislate on those S&T topics and to validate them against a set of criteria to determine if they should be included in the final dataset.

 For the 2009 state legislative session, 37 keywords were used to manually query and validate bills from all fifty state legislative databases. For every keyword, policy analysts manually searched each state website for bills based on the keywords and the research criteria. In 2010, OPAR moved from manual data collection to subscription-based legislative database service. Using the legislative search engine called *CQ StateTrack*, OPAR is able to track federal and state-level S&T legislation and design sophisticated queries that will capture appropriate bills legislating on the keyword with minimal erroneous results. For the 2010 legislative session, the analysts used 71keywords to query for relevant S&T bills in *StateTrack*. For each keyword, the analysts create and save queries, and export the search results to a spreadsheet file. This spreadsheet containing bills from all fifty states legislating on a particular keyword is then validated against the similar set of criteria for inclusion in OPAR’s dataset.

**Findings:** In the 2010 legislative session, states introduced 4,893 bills that legislated on 71 S&T keywords. Of those bills, 749 were passed, for an average enactment rate of 15%. Of the 71 S&T keywords selected to capture relevant legislation, the most frequently legislated topic nationwide was *renewable energy*. There were 1,045 bills introduced into state legislatures that dealt with this keyword*. Alternative fuel(s)* and *fuel cell(s)* followed with 298 and 273 bills respectively. These areas received the most attention from legislation, as 52% of all S&T bills dealt with keywords pertaining to energy.

 Nationwide, the average number of bills introduced per state in 2010 was 192. Of the states that had legislative sessions in 2010, New York introduced the most S&T bills with 561while Wyoming introduced the fewest S&T bills with two bills. Arkansas, Montana, North Dakota, Nevada, and Texas had no legislative sessions in 2010 therefore these states did not introduce any S&T bills. Figure 1 and Figure 2 presents the states that introduced the most and the fewest number of S&T bills in 2010.

 **Figure 1. States that introduced Figure 2. States that introduced**

**the most number of S&T bills in 2010 the fewest number of S&T bills in 2010**

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| **State** | **Number of S&T Bills** |
| **Delaware** | **18** |
| **Kentucky** | **17** |
| **Idaho** | **15** |
| **South Dakota** | **5** |
| **Wyoming** | **2** |

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| **State** | **Number of S&T Bills** |
| **New York** | **561** |
| **Hawaii** | **485** |
| **California** | **356** |
| **Michigan** | **309** |
| **New Jersey** | **255** |

Nationwide, the average number of S&T keywords legislated on was approximately eighteen out of the 71 total keywords. New York legislated on the most keywords, with bills on 41 S&T keywords. Except for the five states with no legislative sessions, Wyoming legislated on the fewest keywords with two S&T keyword.

 The keywords most legislated on were *renewable energy*, *alternative fuels*, and *fuel cells*. Of the 71 S&T keywords in OPAR’s research methodology, twelve keywords did not have any legislation associated with them. These keywords were *3D solar cells, autonomous vehicles, cognitive radio, electronic warfare, grid computing, integrated systems, nonmanufacturing, quantum computing, software radio, technology transfer, unmanned vehicles,* and *virtual schools.*

**Challenges:** One of the most critical aspects of the S&T Legislative Landscape is the selection of the keyword list. This list is fundamental to the methodology as it governs the selection of the bills that are used to understand a state’s public policy towards S&T. Currently, the analysts survey popular media, S&T journals, and policy documents for frequently occurring S&T topics and policy issues to come up with the keyword list. OPAR is in the process of developing stricter criteria for keyword selection.

Although *StateTrack* allows analysts to narrow search results using sophisticated queries, some resulting bills only mention the S&T keyword in passing (i.e. used in the definition of another word) and are not relevant to the keyword. The authors have a defined set of criteria that each piece of legislation must satisfy for inclusion. However, there are some bills that do not meet all of the criteria but could also be deemed as relevant bills for inclusion. In order to combat this, the validation process is repeated by a different set of analysts. The second team validates a random selection of all the collected bills. This selection includes 20% of the bills which pertain to each keyword. The results of the second team are compared with the results of the original team in order to verify consistency in data validation.

Another challenge has to do with the varying legislative sessions and cycles. States have their legislative sessions at different times of the year, which requires the research team to create a complicated schedule for data collection and validation. As a result, there is a small window of time for analysis and publication of results before the next session starts.