

# Connect2Evolve - LastWatt:

*Smart routing of energy based on community voting*

Vasily Sumanov, Sandeep Bajjuri , Onur Solmaz

## **The challenge**

We selected the “challenge 1” to solve during the brainstorm session.

The Challenge was:

How to incentivize the utilization of energy for efficient production inside the community?

In other words: How to maximize the Production output from the limited amount of electricity produced from the container

We divided all energy, generated in the system to the four categories: Business, Households, Community (Hospitals etc.) and Reserve. The “Business” is the rest of the energy remaining after three other categories.

In our model, we focus on the “Business” users.

The goal of our system: to distribute the energy to the most efficient\* businesses.

The task is to choose the subset of I efficient business from the set of N overall businesses.

\*the “efficiency” of business is, of course, a very subjective indicator; we model it in the range of  $[-10; +10]$ , where  $-10$  is “super bad”(unnecessary/comfort) and  $+10$  is “super good”(Necessary) for the community.

If every i-th business gets energy supply  $E_i$  and produce a result for community  $R_i$ , then the aim of our system is to maximize total R for given E for each round (step of modeling):

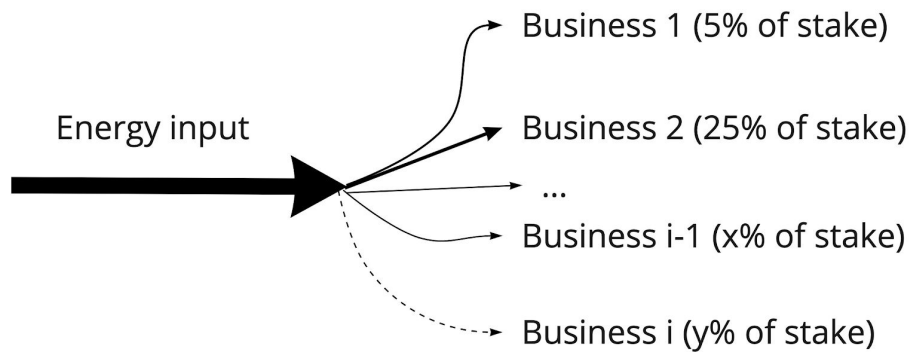
$$\sum_{i=1}^i R_i \rightarrow \max$$

So, how our cryptoeconomic mechanism works (here and further we will refer to a diagram attached).

## **We modeled it on the basis of the Livepeer dPoS staking model.**

Each of the households (there are 320 of them) get 1 token and can use this token for staking on behalf of one business (of course, it is a great simplification, our future work is to add the possibility to stake on behalf of multiple businesses).

So, each step of simulation (or round) stakers make their choice by placing stakes for. So, for example, one business gets 5% of stakes, the other one 1% of stakes, etc. Each business gets share of electricity according to the stake



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Each round households can change the allocation of their stakes.

Building blocks of the scheme:

- **Weather** - input trigger (stochastic variable) that triggers the exactly amount of produced energy
- **Business input conditions** - the stochastic variable based on random normal distribution indicating the performance of the business. What is going inside the business cycle of the business is out of the scope of this model.
- **Stakers decision** - staker can select only one business to stake his token. Also, the staker can miss the round.
- **Reward/penalty policy:** if staker staked his tokens on behalf of business that (a) provided positive output for the community (b) was selected as an I-subset of N businesses he gets part of business revenue as a reward. It is an economic incentive for staker. In case staker made the wrong decision, his stake is partially slashed. Staker can change his selection each round.

**The result:** finally, the system achieves the semi-stable condition where the Business part of energy utilizes in most efficient way according to the community decisions and real business value.

Of course, it is a simplified the model and the real world is much more complex (please, see the “future work” section in our presentation, we will show all the stuff there).