



(54) **OUT-OF-BAND SIGNALING AND ENERGY CONSUMPTION BASED ROUTING**

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(57) **ABSTRACT**  
A processing system including at least one processor deployed in a communication network may obtain at least a first energy usage indicator of at least a first network element of the communication network, obtain a selection of an energy factor-based routing for at least one packet, and route the at least one packet in response to the selection of the energy factor-based routing, where the energy factor-based routing is based upon the at least the first energy usage indicator of the at least the first network element.

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The diagram illustrates a network architecture 100. A central cloud-like shape represents **NETWORK 102**. Inside this network, there are two distinct slices: **NETWORK ELEMENTS 161 (SLICE 1)** and **NETWORK ELEMENTS 162 (SLICE 2)**. A **NFVI 151** block is positioned above Slice 1. Below the slices, within the main network cloud, are **SERVER(S) 104**, an **SDN CONTROLLER 106**, and two network elements labeled **NE 171** and **NE 172**. To the left of the main network, an **ACCESS NETWORK(S) 120** (represented by a cloud) is connected to the main network. It includes a base station **117**, a **DEVICE 182** (represented by a smartphone icon), and **SERVER(S) 131**. To the right, an **ACCESS NETWORK(S) 122** (also a cloud) is connected to the main network. It includes a base station **118**, a **DEVICE 184** (smartphone icon), and **SERVER(S) 132**. Arrows indicate bidirectional communication between the main network and both access networks, and between the access networks and their respective devices and servers.